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ORIGINAL LECTURES.

PROCIDENTIA UTERI.

A Clinical Lecture delivered at the Good Samaritan Hospital.

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(Reported by John M. Withrow, M.D., Assistant to Chair of
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THE patient for to-day's clinic is suffering from procidentia uteri. When the entire uterus is external to the body and enveloped in the inverted vagina, it has been called by various names. By some it is called prolapsus uteri, and others, who see in this condition a close resemblance to the pathological protrusion of other organs, call it a hernia. I think procidentia appropriate to designate complete prolapsus.

The name of the condition, however, is of only secondary importance to us to-day, and we shall at once consider briefly the causes and methods of treatment. You have been taught to consider the uterus as a freely movable organ, suspended by ligaments and soft parts within the pelvis. Every pathological change in the position of the uterus indicates some pathological condition of these supports. It has been the custom to divide the causes of uterine descent into: 1. Those which press the uterus down from the abdominal cavity. 2. Those which drag the uterus down from below. 3. Those conditions which so increase the size of the uterus that its own weight leads it gradually to assume a lower position in the pelvis. Now, while it is very clear that such classification is quite rational, it is of little importance from a clinical standpoint, and a correct conception of the character and sequence of the several events which combine to create procidentia is of much greater value. This uterine displacement is usually the result of parturition, although not immediately following it, and, consequently, as in the case before you to-day, it is almost always a disease of middle life or old age. Some rare instances of procidentia have been reported in young unmarried women as a result of violent straining efforts, or sometimes it occurs from the attempts of the uterus to extrude a polypus. Except these cases, which are very rare, procidentia is either a direct or indirect result of the lacerations occurring during parturition or diseases incident to the puerperal state.

Of these puerperal diseases, probably the most important is the subinvolution of the uterus, with or without subinvolution of the vagina. Subinvolution of the uterus acts as a cause by increasing the weight of the organ, thus tending to the gradual weakening of its supports. When subinvolution of the vagina also exists, the disease comes on more rapidly, since the normal resistance of the vaginal walls to the descending uterus is impaired.

You may confidently expect uterine descent in those cases in which you find after the puerperal period a large boggy uterus, with flabby non-resistant vaginal walls, unless proper steps are taken to cure the subinvolution in both organs. Here the uterus, sinking by its own weight, wedges apart the vaginal walls, thus increasing both its own and their congestion, until it forces itself through the feebly resisting vulvar cleft. If, in addition to this increased weight, subinvolution, there also exists such an injury to the vagina as impairs its ability to sustain the uterus in the beginning and to resist its descent afterward, procidentia is all the more likely to occur.

This injury to the vagina not only conduces to the disease in this way, but it also leads directly to vaginal subinvolution and remotely to uterine subinvolution. One form of such vaginal injury as is productive of procidentia is sometimes observed in the absence of either perineal or vaginal laceration, where the descending head pushes the vaginal mucous membrane in advance of it during labor. In these cases the mucous membrane is torn loose and glided upon the deeper vaginal structures, and pouts at the vulva very much as a loose sleeve lining is pushed ahead of the hand in putting on a coat. This is all the more likely to occur because of the œdema of the submucous connective tissue of the vagina which ensues during the latter part of gestation. It is in such cases that we are apt to have uncomplicated vaginal subinvolution, and later on this flabby, congested organ dragging upon the uterus at the cervico-vaginal junction may induce uterine descent. You can also readily understand that this descent is likewise promoted by the absence of support which would occur in such an organ.

We now come to those more patent lacerations of the vagina and perineum which are the most frequent causes of the disease we are studying. Simple lacerations of the perineum in the median line, even when quite extensive, are not as active in the induction of procidentia as was formerly supposed, and many women with marked perineal loss go through life without suffering from descent of the uterus. The vagina and pelvic floor are not of so much service as supporting agents to the uterus as might be inferred from a casual study of their relations. The uterus does not bear its weight through the cervix upon the posterior vaginal wall. It is swung to the pelvic walls by means of ligaments, but you must remember that these ligaments approach the uterus intimately connected with the vagina and are attached to it at about the same place; that is, the cervico-vaginal junction. This is especially true of the sacro-uterine or posterior, and the vesico-uterine or anterior ligaments. The broad ligaments, spreading out laterally from the uterus, serve more to stay it, and keep its fundus in the proper direction than as actual supports.

Bearing in mind, then, that these anterior and pos-

terior ligaments closely blended with the vaginal walls at their mutual points of attachment are, with their fat and connective-tissue packing about them, the chief supports of the uterus, you will readily conceive that when the vaginal walls drag downward they pull these ligaments with the uterus in the same direction. Consequently, when any disease or injury destroys the tonicity, stiffness, or support of the vaginal walls, in the lower part of the canal, they are left in some degree suspended to the uterine ligaments, and thus act as mechanical force drawing the uterus down by their own weight.

Now let us consider briefly the agencies supporting the vagina. The lateral walls are rather firmly attached to the pelvic fascia, which suspends them to the pelvic walls, in an upward and forward direction, above the origin of the levator ani muscles. The posterior wall is supported and held upward and forward by the levator ani muscles, between whose lateral halves the vaginal canal emerges at the vulva. These muscles, with the fascia covering them, are the chief supports to the posterior vaginal wall and the perineal body. They meet in this body after encircling the mouth of the vagina, between it and the anus. Their direction from their origin on the anterior and lateral interior walls of the pelvis is downward, backward, and inward toward the perineal body, thus forming, with the median portion of the same muscles, called the pubo-coccygeus, a sort of sphincter to the vagina. By this arrangement the posterior wall is literally slung up against the anterior wall, which is thus supported. In front of and above the anterior wall lies the bladder, which derives some of its support from the vagina. The rectum lying behind the posterior wall, does not serve to sustain the vagina, except in so far as it is itself held up by the levator ani, coccygeus, and other structures of the pelvic floor.

The sequence of events following perineal and vaginal injuries varies in different cases, and depends upon the character of the laceration and the position of the uterine axis. If there is such injury to the mouth of the vagina that the levators are divided laterally, or torn away from the fascia at the side near the mouth of the canal, without any or extensive perineal injury, the anterior wall at the lower part being thus unsupported, will probably pout at the vulva first, forming a cystocele. Following this, traction will first be made on the anterior ligaments by the sinking bladder and anterior vaginal wall, and the uterus will be anteverted. As the uterus descends the posterior wall comes down until prolapsus is complete and procidentia exists. In such a case, however, the cystocele will always be more prominent than the rectocele. Indeed, if there has been no injury to the perineum, there may never be a rectocele, and you may be able to introduce the finger between the uterus and posterior vaginal wall to a limited extent even with the entire uterus external to the vulva.

If, on the other hand, there should be extensive laceration of the perineum extending up the posterior vaginal wall, the sequence of events is changed. In this case the levators are separated from each other at their point of union in the perineal body and the muscles in contracting draw the sides of the vagina forward by means of their intimate union with the fascia, from which, in this injury, they are not necessarily torn. Thus the

posterior vaginal wall, deprived of their support, and by the same injury losing the foundation normally given by the perineal body, sags down and out, producing rectocele. As the rectocele increases by the gravity of congestion and the straining efforts of defecation, it ultimately drags down upon the posterior ligaments of the uterus, first causing a retroversion, and gradually leading to descent and procidentia. Cystocele in such instances will usually appear before a condition of entire procidentia takes place, but since it mostly ensues after some descent of the uterus has occurred, we are justified in assigning the cystocele to the third place in the general displacement. You must remember, however, that in these cases there is always more or less cystocele, and that it is not absent in some cases of this class, as rectocele sometimes is in the class of cases previously mentioned, where cystocele was the first step in the displacement.

Let me now call your attention to the order of occurrence of these deformities in a third class of cases, in which there has been no laceration anywhere in the parturient tract. I have already referred to these cases as instances of general subinvolution of the uterus and vagina, and those cases where there has been a separation of the vaginal mucous membrane from the deeper structures.

In these the order depends upon the direction of the uterine axis when the heavy, congested uterus begins to descend. If the uterus is retroverted, the posterior vaginal wall is first lowered by the sagging posterior ligaments; and then, acting as a further cause by its own weight, it sinks lower, drawing the uterus downward, and, consequently, rectocele is the first event in the displacement followed by prolapsus of the uterus and cystocele until procidentia occurs.

The first deformity noted in this instance is not properly a rectocele, but a prolapsus of the posterior wall. I mean by this, that if you were to introduce your finger into the rectum you would not find that the anterior rectal wall was depressed or sacculated forward into the prolapsed vaginal wall as in a rectocele. Here the rectum is not affected, but remains normal in direction supported by the perineal body, and only the vaginal wall loosed from the rectum and perineal body, has come down in advance of the descending uterus. If, on the other hand, the subinvolved uterus becomes anteverted preceding descent, and its heavy fundus lies upon the bladder, the depressed anterior ligaments will let down both the anterior vaginal wall and the superjacent bladder. Thus, as the anterior wall descends, a cystocele becomes the first of the three important events which will later characterize the displacement—cystocele, uterine prolapsus, and rectocele, or prolapsus of the posterior vaginal wall.

We now come to the important subject of treatment. What can we do to alleviate the suffering and remove the inconvenience of patients who are the subjects of this dreadful condition?

In the third class of cases where there is no laceration, and where the exciting cause is to be found in defective involution, we can usually cure the affection by postural and therapeutic treatment, followed by the use of suitable pessaries. In such cases you should put your patient in bed, replace the uterus, use at first copious vaginal irrigations of hot water, and, later, the

depleting influence of glycerine and astringent tampons, at the same time administering judicious constitutional tonics. When in this way the uterus is greatly reduced in size, and the tonicity of the vaginal walls is improved, a suitable pessary may be introduced, and the patient allowed to go about.

It is not usually necessary to have recourse to surgery in such cases, and the use of a pessary without first treating the subinvolution, would be unwise, since the presence of a pessary would only increase the congestion in the vaginal walls, besides stretching an already too greatly distended canal, although at times the early introduction of a pessary will so straighten the vagina that the circulation will really be improved. When, however, proper treatment has so reduced the venous congestion of the vagina, and its canal is constricted by astringents, and toned up by tonics, a pessary is well borne and decidedly indicated. It will prevent the very beginning of uterine descent, and maintain the parts in such a position that the circulation is not impeded, and venous stasis improbable.

Notwithstanding these facts, you will every now and then hear of a physician who denounces pessaries *in toto*, boasts to his patients that he don't believe in them, removes them whenever he finds them, making the removal the occasion for adverse criticism. It is sufficient to say that, as a rule, such physicians have not informed themselves as to the conditions demanding the use of the pessary, nor have they any clear or scientific conception as to the *modus operandi* of support.

In the first two classes of procidentia, where lacerations of the vagina or pelvic floor are the underlying cause, surgery offers the best prospect of cure. All operations looking to the relief of procidentia propose, as nearly as possible, to restore the injured parts to their normal integrity in the first place, and in the second place, so to narrow the vagina as to prevent the descent of the uterus. Of course, this narrowing must not be so extensive as to destroy the function of the vagina.

While there has been a general unanimity among gynecologists as to the requirement of some narrowing operation, they do not agree as to the proper site and method of the repair. Some constrict the canal by operating upon the anterior wall, others confine their efforts to the posterior wall, and still others operate upon both; while all agree in restoring the parts damaged by the original injury. I regret to be obliged to say to you that no one method yet performed has been uniformly successful.

Sims, one of the pioneers in this field of surgery, was quite successful in correcting this affection by making a V-shaped denudation upon the anterior wall, as I here show you upon the board. The difficulty which sometimes arose after this procedure by the cervix getting into the pocket left behind this fold, was quite a formidable objection. Consequently, Emmet modified the operation by making three points of denudation here upon the anterior wall just below the cervix, as you see in the diagram. He drew these three points together by sutures, indicated by these lines. In this way a fold was made upon the anterior wall and no pocket left. This method, however, was not uniformly successful, and has the objection of leaving a strip of undenuded tissue between the two sides of the folds, thus weakening the repair line.

Hegar operates upon the posterior wall by denuding a large triangular space, whose base is the integument of the perineum and the apex is upon the posterior wall well up toward the cervix. The width of this triangle depends upon the amount of perineal laceration and the height upon the extent of the rectocele. The sutures are introduced transversely at the upper part of the triangle near the apex, while the sides of the lower part of the denuded triangle are brought together by perineal sutures as in the ordinary operation for perineal laceration. These lines, here in the figure on the board, indicate the direction taken by the sutures both above and below.

Simon's operation is performed in the same place, and differs only in the shape of the denudation, which in this case is roughly shield-shaped, as I here show you. Since the denudation here is wider upon the posterior wall, it accomplishes a more extensive narrowing of the vagina than Hegar's method. The sutures are introduced in much the same way as I have just demonstrated in Hegar's operation.

Martin, of Berlin, has devised an operation which presumes to restore the longitudinal columns on the posterior wall, at the same time narrowing the vagina and repairing the perineum. This drawing illustrates the shape of denudation, and these lines indicate the position and direction of the sutures. By drawing together the sides of these two parallel tracts of denuded surface upon the posterior wall, two cicatricial columns are formed, one on each side of the median line, which not only narrow the vagina but likewise stiffen its posterior wall. The coaptation of the two sides of this somewhat crescent-shaped denudation, at the lower end of these parallel tracts, repairs the perineum.

Martin also insists upon the amputation of the cervix as essential to the success of his operation, believing that there is always more or less hypertrophic elongation of the supra-vaginal portion of the cervix. I cannot consent to such universal necessity for cervical amputation, although I have often practised removal of the cervix where its hypertrophy was excessive, and in such cases I believe the amputation a most important adjuvant to the operation.

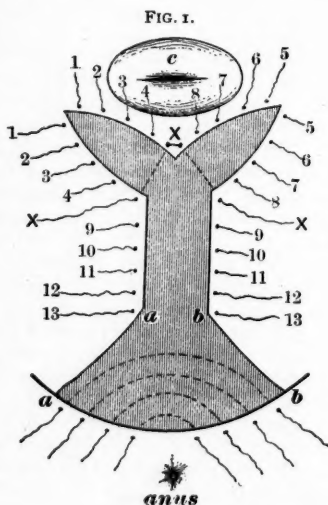
When in cases of prolapsus there is much subinvolution of the uterus which does not improve markedly during the treatment preparatory to the operation, and the cervix remains large and boggy without being specially elongated, I prefer the excision of a wedge-shaped piece of tissue. I have found such practice eminently satisfactory, both in diminishing the size of the cervix and in curing the general subinvolution of the uterus, for I believe that no operation will be permanently successful in curing prolapsus if the uterus remains in an excessive state of subinvolution.

Alexander's operation has lately come into fashion as one of the surgical procedures for curing prolapsus. It consists in shortening the round ligaments of the uterus at their points of insertion at the inguinal rings. It sometimes fails, is always difficult and frequently dangerous, and inasmuch as it is yet only on trial, and other safer operations are quite satisfactory, it is not to be recommended.

Dr. Paul F. Mundé advises both a modified Simon operation upon the posterior wall, and Stoltz's method upon the anterior wall for cystocele, in cases of procidentia.

Stoltz makes an elliptical denudation upon the vaginal wall between the meatus and the cervix after the manner of Dieffenbach as is here represented, and then brings the freshened edges together by a single suture in a drawstring fashion, as is illustrated by this dotted line. In cases of long standing, where the cystocele is especially prominent, the necessity of narrowing both vaginal walls cannot be obviated, although generally a skilful repair of the posterior wall will be sufficient. Various other operations upon the posterior wall are performed, but those just mentioned give an idea of the object generally sought and the methods employed for its attainment. Notwithstanding all these ingenious plans, however, as I said a little while ago, none has been uniformly successful.

I, therefore, propose to-day to perform and illustrate an operation for this condition, which I have been practising for several years, and as yet with very satisfactory success. It is somewhat similar to an operation which I performed in your presence last year for cystocele; but, as you shall see, this is performed upon the posterior wall with the threefold object of correcting a procidentia, curing a rectocele, and repairing a lacerated perineum.

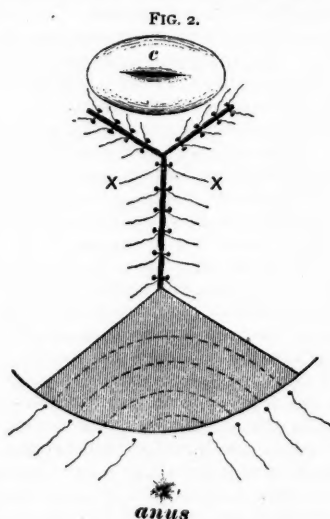


The patient will now be brought in. This patient is forty-five years of age, the mother of four children, the youngest five years old, and she is still menstruating. As you see, she is strong and well nourished. She has been a hard-working woman, and her vigor is even yet only impaired by the inconvenience and suffering caused by a procident uterus.

She first consulted me about three months ago, at which time the entire uterus was external to the body, and there was an extensive erosion of the cervix extending fully an inch from the external os in all directions. After touching this with lunar caustic I replaced the uterus and introduced a very large elastic ring pessary, the watch spring, covered with rubber; I also directed copious daily vaginal irrigations of hot water. The pessary kept the uterus up for as long as four weeks, during which time the erosion entirely disap-

peared and the organ was greatly reduced in size, but every now and then since, the poor woman came with pessary out and uterus down. Of course, I did not hope to cure entirely such a case as this by such treatment. I only desired to put the uterus in the best possible condition, preparatory to an operation. But please note the good effects of keeping the uterus in position even for a short period.

The patient is now thoroughly anesthetized, and I remove the pessary. You observe the uterus is not visible at the vulva. But when I part the vulvar walls you can see the external os, and with this vulsellum I easily draw the entire organ completely outside the body. With the uterus in this position you can plainly note the greater prominence of the rectocele as compared with the cystocele. Now that I have pushed the uterus back into position, this greater prominence of the rectocele is more perceptible. When I introduce my finger into the rectum, you can plainly see, from your seats, that it enters into this pouting tumor here at the posterior commissure, demonstrating that we have to deal with a rectocele and not a simple prolapsus of the posterior wall. You also see when I part these vulvar walls that there is an extensive laceration of the peri-



neum extending clear back to the sphincter, but not involving it.

In this case I think we are justified in assuming that the rectocele was the first in the sequence of events leading to the procidentia. We now make the operation.

Now that the operation is completed and the patient out of our presence, let me, with the assistance of these diagrams on the board, explain its steps more in detail.

Fig. 1 represents the shape of the denuded surface on the posterior vaginal wall. The arms at the upper part extend well up to the sides of the cervix in the lateral culs-de-sac of the vagina. These are denuded as deeply as is possible without entering the peritoneal cavity just below and behind the cervix, and without interfering with the ureters at the upper lateral extremities.

It is very important that this denudation be deep, since in the first place it will give greater supporting strength by the thickness of the line of union obtained, and in the second place a deep denudation of these lateral arms will unite the vaginal walls more intimately with the underlying fascia. This increases the supporting power of this fascia to the vaginal culs-de-sac, and thus to the uterus, by giving it a "shorter hold" to the vaginal walls, if you will permit the expression.

The width of the denudation upon the posterior wall depends upon the amount of vaginal constriction required. You must be governed in the amount of divergence between the lines *aa* and *bb* by the extent of perineal injury. The greater the injury the wider the divergence.

If there should be no laceration of the integumentary perineum, these lines should converge to a point on the posterior vaginal wall at or just behind the fourchette. I use catgut for the sutures inside the vagina, those numbered in the figure 1 to 13 inclusive, and also for the suture marked \times , because of the difficulty in removing either silk or wire over the freshly united perineum.¹ These should all be tied before the perineal sutures are introduced, indeed, it is best to secure them before the perineal denudation is made.

The suture marked \times is of great importance and I wish to call special attention to it. It should be introduced about one-quarter of an inch from the border of the denudation in the angle made between the denuded tract on the posterior wall and one of the denuded arms. From this point it is carried across the denudation in the direction indicated by the dotted line and brought out in the undenuded apex between the two arms behind the cervix, it is then reintroduced in this apex about one-quarter of an inch from its point of emergence and carried across the other denuded arm in the direction of the other dotted line and brought out at a point in the opposite angle between the lateral arm and the posterior tract corresponding to the point of entrance. In tying this suture across the upper part of the posterior denuded tract the three angles are brought together.

Fig. 2 shows the field of operation after all the vaginal sutures are tied. For the perineum silver wire is used in the usual way, as shown here in the diagram, but the upper sutures should be carried across high up, about on a level with the lowest suture inside the vagina, so as to secure perfect coaptation of the line *aa* to the line *bb*.

Finally, as to our patient; sexual intercourse must be forbidden for three months after the sutures are removed. During this time she must not do hard work, but must spend part of each day on the couch. These precautions are necessary in order that the modified vagina may become firm, and that the uterus in its re-

stored position may undergo involution. For, unless the weight of the uterus be reduced, it is only a question of time when prolapse will again occur, no matter what operation has been done upon the vagina.

ORIGINAL ARTICLES.

ANEURISMS TREATED BY THE INTRODUCTION OF CATGUT, OR OF WIRE, WITH ELECTRICITY.¹

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THE domain of cases upon which the surgeon may operate, owing to newly adopted principles, is enlarging year by year, and just in that proportion the number of "hopeless" cases diminishes. The most superficial observer will see a growing disposition to interfere with many varieties of infirmities for which in the past active treatment has been discouraged by all surgical authorities. One is led from time to time to review such maladies, and to ask whether advanced methods will yet allow us to touch them. As the miner has often found a fortune in the discarded ores of silver mines when worked over by a new process, so now some of the forbidden cases of twenty years ago are fairly met by justifiable new procedures.

In this spirit of inquiry I venture to open the question of the value of interference with a small class of aneurisms, the treatment of which has heretofore been considered useless. This class is that of aneurisms springing from the aorta or its greater branches, and not amenable to the ligature or relieved by medicine, diet, or rest. These are so common that we all see them from time to time. They run a steady downward course, interrupted, happily, in some cases by a temporary clotting, but soon advancing again, leaping the barriers of bone and cartilage until the thinned walls give fatal pressure effects on veins, nerves, or the trachea, or sudden rupture ends the patient's misery.

Taking our guide from nature's attempt at repair by the two methods of deposition of firm clot, or by thickening the sac through hypertrophic, or inflammatory, changes, we find the most promising to be that of inducing clot within the sac.

Practically, accumulated experience shows that coagulation *will* take place upon certain foreign substances introduced into the current. Wire is especially favorable, either silver, iron, or steel. This can be sterilized by preliminary boiling in carbolic solution. Thirteen cases of the use of wire have now been reported, to which I am able to add two more. The first attempt was made by Mr. C. H. Moore, of Middlesex Hospital, in 1864, of which I will speak later. Moore's method consists merely in the introduction of wire. Of the cases now on record, the most brilliant results were obtained last year by Loreta, of Bologna, and Morse, of San Francisco. The outcome of the others has not been curative, though seeming to look in the right direction.

¹ The great objection to catgut, heretofore, has been the danger of its speedy absorption before union had occurred, but this difficulty has been surmounted by the method of Veit, of Berlin. He places the gut in pure oil of juniper wood for twenty-four to forty-eight hours, and then preserves it in a mixture of pure alcohol and glycerine, ten per cent. of the latter, till used. Water should never touch the gut. In this way it lasts in the tissues for ten or twelve days. See letter by Paul F. Mundé, Amer. Journ. Obst., page 914, 1886.

¹ Read before the New York Surgical Society, March 23, 1887.

Last year Mr. Richard Barwell practised a modification of Moore's method, by introducing ten feet of steel wire into an aneurismal sac and passing a current of electricity through it, sufficiently strong to obtain an electrolytic action and to induce the formation of a coagulum by quick deposit. Thus, he substituted a long wire, coiled in the blood-current, for the short needle-point of so-called electropuncture, which latter alone has in many hands been of unquestionable service in ameliorating the condition of aneurisms in the last stage.

Mr. Barwell's patient was a man with large aneurism of the aortic arch, apparently a hopeless case, and associated with serious lung trouble. A fine, insulated trocar served to allow the steel wire to pass. The positive pole was attached to this, while a negative pole of spongiopiline was spread over the back. A current of ten milliamperes was passed for an hour and ten minutes. The man had no pain or inconvenience. The tumor gave no sign of immediate improvement, but in twelve hours "the man appeared much better, the tumor was more solid, and the pulsation more distant." Four days later a tumor appeared at the other side of the neck, which had been observed two years before, and then disappeared—evidently an extension of the sac in that direction. One week later he died of his pulmonary trouble. A post-mortem was obtained, and of the clot that was formed in the aneurism he says: "The wide coils of wire are surrounded by thick, firm, colorless clot, which in many places binds the wire to the sac-walls, thus strengthening them and rendering rupture hardly possible where the wire had penetrated. In the secondary sac this had not formed." Barwell commends the method for large internal aneurisms.

Soon after the publication of Barwell's case, Dr. J. West Roosevelt, of this city, had an opportunity to try the method on a case of aggravated aortic aneurism threatening death. He has kindly offered me the case to report in this connection.

The patient was a man of twenty-five years, with a syphilitic history. In November, 1885, he began to notice a dry cough; some weeks later dyspnoea and dysphagia ensued, and pain was present in the right pectoral region and axilla, occasionally extending down the right arm, or into the back near the scapula. At that time also he noticed a pulsating tumor in front of the chest at the right of the sternum. His dyspnoea was great when he lay on the left side or back. He had been prevented from working for four months, yet he was in fair flesh. The pulsating tumor involved the four upper ribs near the sternum and gave a double bruit. He was given iodide of potash, was kept at rest, and somewhat under the influence of anodynes for two weeks with slight ease from pain, but the tumor continued to enlarge.

On the 4th of August, Dr. Roosevelt placed the man on his back, and inserted a short, insulated aspirator-needle into the tumor; when the blood trickled out, he passed about seventy-five yards of fine steel piano-wire (No. 00). The patient experienced some feeling of weakness, became pale, and had pain, from the position on the back, to which he was un-

accustomed. The wire was connected with one pole of a constant battery, and a large wet reophore was placed under the right shoulder. From four to eight cells of an ordinary galvanic battery were used, measuring about twenty-five milliamperes. It gave him no pain, and was continued for a half hour. The tumor still pulsated. The patient was kept quiet another half hour and then was put to bed. He had no pain subsequently from the operation. On the following night he required morphia for insomnia.

Next day the tumor did not pulsate so strongly, and he had some pain and vertigo. On the third day the tumor was less painful, but still pulsated. His breathing was not so comfortable, and in the evening his temperature rose to 100°, but fell to normal in the morning, and remained so afterward. On the fourth day dyspnoea and slight cyanosis appeared. On the seventh day he was better than before the operation, and had less pain and dyspnoea. By the tenth day the tumor was much less painful, the pulsation visibly diminished, and he could breathe easily lying on his back or left side, which he formerly could not do. During the third week he could swallow and breathe with greater ease, and the tumor felt harder. At the beginning of the fourth week he began to vomit, and to complain of headache. His iodide of potassium was, therefore, stopped. On the twenty-second day a painful, dark-colored spot appeared on one toe, and the man appeared badly. On the twenty-third day he died. No autopsy could be obtained.

In October last, I had an opportunity to repeat this operation in the following case: A man, forty-six years of age, free from specific history, was referred to me by Dr. Naughton, for treatment of a large pulsating tumor at the root of the neck, on the right side. It had been observed as a very small swelling above the clavicle, not more than a year before, and had steadily enlarged until now it filled the supra-clavicular space, extending backward to the scapula. The greater growth of late had been back of the middle plane of the neck. A loud bruit could be heard over its entire surface. Its pulsation lifted the shoulder at every beat. Neuralgic pain of the right shoulder and arm had been coming on for several weeks, and pressure on the brachial plexus caused paralysis of the deltoid and triceps muscles. The right arm and right half of the face remained dry, while the opposite side was covered with profuse perspiration. There was slight hoarseness. The right pupil was smaller than the left, and ptosis of this eye had developed. The axillary, brachial, and radial pulses were small. A diagnosis of dissecting aneurism of the subclavian was made.

After consultation (Drs. Sands, Weir, Peters, McBurney, Bangs, Lange, and Bull) it was decided that the condition would not be checked even by ligation of the carotid, with shoulder amputation, and being left with a patient whose pain was only eased by frequent hypodermatics of morphine, while the growth of the aneurism could be seen to advance every day, I decided to resort to Barwell's method, to lengthen his life, and, perhaps, to lessen the

pain. The oval cavity of the tumor was estimated to measure four by five inches.

After three weeks' observation, under iodide of potassium, I decided to use catgut before employing wire. I operated on November 19, no anæsthetic being given. With a No. 2 aspirator-needle, I pierced the front of the sac, and the blood spirted out to a distance of two or three inches. No. 1 catgut, taken fresh from juniper-oil, and drawn through a damp sublimated towel, was easily, though slowly, pushed into the sac. It was best fed by short grasps of the thumb forceps. One hundred feet of it were thus introduced, occupying an hour. The patient lost two or three ounces of blood only, and had no pain, or discomfort, whatever. There was a slight rise of temperature (to 101° F.), on the following day, the pulse remaining unchanged. The tumor was a little warmer than before. On the second day the patient continued to feel well. The outer third of the sac had very decidedly hardened; the remainder pulsated as before. An ice-bag was ordered to be applied. The radial and brachial pulses could not be felt. The hand continued warm. On the third day his temperature rose to 102° , though he felt otherwise as well as he did before the operation. After that his temperature declined rapidly to normal. The tumor, however, grew decidedly backward and upward during the week, and lifted the scapula. On the eighth day the dissection seemed much more rapid, and the hoarseness amounted to aphonia.

On the ninth day Dr. Roosevelt very kindly assisted me, and I introduced through an insulated aspirator-needle one hundred and fifty feet of fine steel wire, sterilized by boiling in carbolic acid solution; a copper plate a foot square, covered with wet cotton, was placed over his back and was connected with the negative pole, and the positive was attached to the end of the wire. A current was measured by Dr. Roosevelt up to fifty milliampères, which was the limit of the register. This required but fifteen cells; the entire thirty-six cells of the galvano-faradic battery were subsequently applied. The patient experienced no pain or discomfort. His pulse which had been 110, rose only ten beats during the process. The current was continued for an hour—the latter part of the time reversed so as to bring the negative pole within. He was rather exhilarated than otherwise, and when removed to bed would not have known that any operation had been done.

The tumor still pulsated when we concluded. On the following day I could perceive an increased firmness in the walls, though the pulsation continued. Subjectively the patient felt rather better, and I had some hopes of the outcome, when, on the second evening, he suddenly had a rupture of the sac into the trachea and expired. It was impossible to obtain an autopsy.

Although it is to be regretted that these cases could not be followed to the post-mortem table, there are yet some points of value in each that may be added to the study of the subject. It will be seen that both were utterly hopeless cases, and, while we cannot assert that life was prolonged, it

was not shortened by the operation. In my own case the man was approaching his end, and it was his only hope.

The question may be asked, whether the rupture of the sac into the trachea was hastened by the pressure of the wire inside. I judge not, for the tracheal pressure that preceded the rupture had been progressively getting worse, as evidenced by the hoarseness increasing for a month—showing that it was making its way toward the trachea. I find three other cases of rupture following active treatment. One of Churton's last year, in which he had used electro-puncture without wire, and in twenty minutes fatal hemorrhage from the trachea ensued; the other was Domville's case of aortic aneurism, in which he put fourteen inches of iron wire into a sac, and when four weeks later the man died of sudden rupture into the pleura, it was found that no wire was near the perforation. The same occurred in Dr. Ransohoff's case, reported at the last meeting of the American Medical Association; over ten feet of silver wire were introduced into the sac, in two sittings, three weeks apart. Death suddenly occurred one week after the last, from rupture into the pleura, but the autopsy showed that there was no wire near the place of rupture. (THE MEDICAL NEWS, May 29, 1886, page 597.)

Whether the duration of life was longer or shorter owing to the treatment by wire insertion, is pure speculation. My own impression is, from studying all the cases, that without exception every one was in a desperate state before operation. Some even threatened dissolution. My own patients lived thirty-six hours only, before rupture occurred. Most of them lived several weeks, and Loret's, ninety-two days, having apparently been restored to health, while Morse's still survives. In one case reported by Mr. W. Cayley, the large aneurism at the root of the neck became solid and the patient lived eighty-six days after some forty feet of steel wire were introduced. The thoracic portion of the aneurism extended, and Mr. Gould subsequently put in thirty-five feet more to solidify if possible the portion that was causing serious dyspnoea. No disturbance followed nor was he relieved.

As regards the chances of emboli from the wire giving trouble, I find but two of the fifteen cases in which wire was introduced, that caused such an accident. Mr. Moore's case, the first on record, showed at the post-mortem suppurating foci in the kidneys, with death on the fifth day. As the case occurred in 1864, it is quite as probable these were septic as that they were embolic. No case that has since been done has shown septic infection, due to the care now exercised in sterilizing the wire.

In a note in the *British Medical Journal* of May, 1885, Dr. Maclean, who witnessed Mr. Moore's operation twenty-three years ago, and who saw the organs and aneurism after the autopsy, says that the immediate cause of death was inflammation of the sac and the pericardium, and also he recalls the innumerable clots in the fresh preparation, of varying consistence, hanging from the wires, ready to drop into the blood, and emboli exactly like them were found in the arteries of the organs dissected to

show them." In Dr. Roosevelt's case a dark colored, painful spot appeared on one toe on the twenty-sixth day. The absence of other reported accidents by emboli, shows that it is no more to be feared from wires than from the untreated walls of an aneurism.

Having shown that nature will tolerate considerable quantities of wire for periods of eighty-six and ninety-two days, and even indefinitely in favorable cases, as in Dr. Morse's, and that it has never been known to induce suppuration when aseptic, it is now of importance to see how much solidification is really brought about by the foreign substance. Of the sixteen cases of wire-insertion, eight were followed to an autopsy. Bacelli's third case, in which seven watch-springs, each about twenty inches long, were inserted, was the only one which failed to show coagulation. The patient lived only two days. His second case, in which three springs were introduced, lived ten days, and excellent clots were found around the metal. His first case, in which only one spring was used, lived two months, was improved, and presumably the wire was imbedded. In Domville's case fourteen inches of iron wire were found imbedded in firm clot, two weeks after its introduction into an aortic aneurism, the patient dying of ruptured sac. Dr. Ransohoff reported last year a case of large aneurism at the root of the neck, into which he put at two sittings ninety-eight and ninety-six inches of silver wire. The case was hopeless from the first; however, the patient survived over four weeks. Autopsy showed the "coils of wire imbedded in recent and old clot." In Mr. Cayley's case of large sacculated aneurism of the aortic arch, the patient survived the introduction of seventy-five feet of steel wire eighty-six days, and the "entire upper portion of the sac was filled with clot, in which the wire was imbedded." In Barwell's case (already quoted) the electricity and wire combined had caused the latter to become "surrounded by thick, firm, colorless clot, which in many places bound the wire to the sac-walls, thus strengthening them." In Prof. Loreta's famous case (reported last summer) the post-mortem revelations were very gratifying. The patient was a sailor, who had an aneurism of the abdominal aorta, the size of a small foetal head. Laparotomy showed it to be matted to the viscera, stomach, etc., from which it was separated. Six and a half feet of silvered copper-wire were introduced through a fine canula, the point of perforation was touched with pure carbolic acid, and the wound was closed. He made an excellent recovery. Twenty days later the pulsation had ceased, and by the seventieth day he resumed his work. On the ninety-second day the aorta ruptured at the point at which the sac sprang from it. Autopsy showed that the latter had shrunk to the size of a walnut, and was completely filled with coagula of organized fibrin. The wire was found unaltered, and rolled into a globular mass within the sac.

Dr. Morse's patient, in San Francisco, a man of thirty-two years, received a blow from a coal bucket which resulted in an aneurism of the abdominal aorta, which grew for eight months, accom-

panied with much suffering. Loreta's operation was done, and four and a half feet of silvered copper wire introduced into the sac through the laparotomy wound. The tumor was the size of two fists.

The patient's subsequent temperature remained below 101°.

On the ninth day the left femoral artery became plugged, whether from embolism or endarteritis cannot be said. Pulsation returned in it, however, in the fourth week. The tumor shrank to a small nodule, and so remained without bruit. The patient left the hospital less than eight weeks after the operation—apparently cured.

Dr. Lange reported a case to our Society quite recently, in which he obtained an autopsy. He had inserted thirty feet of wire into an abdominal aneurism. The patient survived twelve days. The specimen showed the wire imbedded, to a large extent, in firm clots against the wall, but free in some places in the current. It is reasonable to believe that it would always be buried in laminated clot, if left for a while.

As bearing upon this point, I would note that Schrötter, of Vienna, two years ago inserted twenty inches of Florence-silk into a large aneurism, and four days afterward thirty inches more. The patient died in the third week, of pulmonary oedema, and the autopsy showed the silk in coils entirely enclosed in laminated clot. In Bryant's case of popliteal aneurism, the horse-hair was enveloped (to use his words) in "huge laminated clots." The inflammation of the sac-wall probably plays no small part in aiding solidification. I feel convinced that it is desirable to provoke some inflammation. In my patient there was a decided increase of local temperature in the outer part of the sac, with slight oedema of the subcutaneous tissue, and hardening of the sac. This followed on the second day, after one hundred feet of catgut had been introduced. The continuous application of an ice-bag entirely controlled the inflammatory action. In Schrötter's case of silk introduction, it is reported that "intense oedema appeared in the vicinity of the sac from its inflammation," the virtue of which was apparent, in the imbedding of the silk, as was found three weeks later at autopsy.

Finally, I would review the part that electricity may play in the combined treatment. We have but three cases in which the sac was subjected to electrolytic action through an extensive wire coil within it. Barwell used a current of ten milliamperes, Dr. Roosevelt about twenty-five, and I one hundred. The patients experienced no pain or discomfort whatever. The current was passed for a period of from half an hour to an hour and ten minutes. In my case the current was reversed during the latter half hour, so as to bring the negative pole within. No change in the patient's condition could be perceived, and no gas could be discovered in the sac, as in some cases of electro-puncture, where it became tympanitic for a short time, without harm.

The promising statements of Cinicelli and others about the value of electrolysis in aneurisms have seemed to many delusive. The small amount of coagulation that takes place around a fine needle, is

perhaps of less value than the irritation of the sac. Therefore, it seems reasonable to my mind that if we tangle a mass of fine wire so that it will reach every part of the sac, and then cause a deposition of clot on it by electrolysis, we do more justice to the method. Cinicelli claims that no cure of aneurisms takes place after electrolysis without inflammation of the sac.

Occasionally a case succeeds, as one reported by Dr. Simpson, of Manchester, in 1881; an aortic aneurism that had eroded the rib and threatened to rupture, continued well five years after repeated electro-puncture.

As regards the strength of the current to be applied, experience only will say. De Watteville thinks that twenty or thirty milliamperes for each needle are sufficient, others five or ten. But, when a large wire surface transmits the current, it is probable that fifty or one hundred are not too strong.

CONCLUSIONS.—It is evident that we need many accurate scientific observations before we can speak definitely of the value of Barwell's method. One may say that Moore's treatment, by simply placing wire in the sac, has not yet been tried in any case that was not already hopeless and in the last days of life. The same may be said of Barwell's; yet the evidence warrants a continuance of its trial. It is not a coincidence that cases show a decided amelioration of symptoms.

It has been proved that there is a deposition of clot; sometimes so abundant as to cure, as in the cases of Loreta and Morse. The fine wire is so yielding that it may be compressed by the aneurismal contraction into a small fraction of its bulk, without exerting much expansile reaction against the wall; and it is probable that an hour's electrolysis so far weakens it, as well as roughens its surface, that it is quite prepared for the deposition of the clot and the shrinkage of the sac.

The operation is not in itself perilous; no deaths have occurred from its performance. The subsequent much-desired inflammation of the sac was easily kept under control by ice-bags in every case.

The principle does not seem faulty, and its application should not be abandoned or condemned, until much more extended trial has been given to it.

CASES.—*Moore*: Med.-Chir. Trans., xlvii. p. 129. *Domville*: Stimson, Ref. Hand-book. *Bacelli*: Bul. gén. de Thérapie, 1878, vol. xcv. p. 262. *Bacelli*: Brit. Med. Journ., 1885, vol. i. p. 1256. *Murray*: Brit. Med. Journ., 1872, vol. i. p. 596. *Rubio*: Brit. Med. Journ., 1886, vol. i. p. 395. *Loreta*: Mem. Royal Acad. de Bologna, vol. vi.; Brit. Med. Journ., 1885, vol. i. pp. 668, 955. *Ransohoff*: THE MEDICAL NEWS, May 29, 1886, p. 597. *Barwell*: Brit. Med. Journ., 1886, vol. ii. p. 675. *Cayley*: Brit. Med. Journ., 1886, vol. ii. p. 395. *Lange*: THE MEDICAL NEWS, November 20, 1886, p. 582. *Morse*: THE MEDICAL NEWS, March 5, 1887, p. 264. *Roosevelt*: THE MEDICAL NEWS, April 9, 1887, p. 398. *Abbe*: THE MEDICAL NEWS, April 9, 1887, p. 398.

EXCISION OF THE LARYNX AND PHARYNX.

BY D. HAYES AGNEW, M.D.,
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D. L. WHITE, male, aged fifty-eight years, was brought to me by Dr. Eisenberg, of Norristown. The

patient complained of impaired or feeble voice, with some hoarseness. He had previously been under the care of Dr. J. Solis-Cohen and quite recently had consulted Dr. Seiler, both of whom had recognized the presence of a growth involving the upper portion of the larynx, and believed to be a sarcoma. At the time the man visited me the neoplasm could be distinctly seen extending down to, but not below the vocal cords. As the growth appeared to be very vascular, it was not deemed proper to pinch off a fragment for microscopical examination. Believing the tumor to be a sarcoma, and in view of its steady encroachment upon the glottis, excision of the larynx was advised. The patient was admitted to the University Hospital on January 31, 1887, and the operation was performed February 2.

An incision was carried from the hyoid bone to the middle of the suprasternal fossa, over the median line of the neck. The isthmus of the thyroid body being large, was tied on each side and divided between the ligatures, after which the sterno-hyoid, sterno-thyroid and thyro-hyoid muscles were detached from their insertions and dissected away on each side, thus exposing the larynx, and two or three of the upper rings of the trachea, anteriorly and laterally. A number of vessels were tied, branches of the superior and of the inferior thyroid arteries. The trachea was now separated sufficiently from the œsophagus to admit the passage of a grooved director, when the former was severed by a probe-pointed bistoury carried between the cricoid cartilage, and its first ring. A rubber cork, through which was passed a siphon tube, was next introduced into the trachea, filling up accurately the lumen of the air passage, and was secured in place by a stout thread. The work of separating the larynx from the pharynx was next effected, chiefly by the handle of the scalpel, and taking along with the perichondrium the origin of the two constrictor muscles. A transverse cut through the thyro-hyoid membrane completed the work of excision so far as the larynx was concerned.

Unfortunately, at this stage of the operation it was found that the growth had invaded the pharynx, and to such an extent as to require its entire removal, saving a very narrow strip of its posterior wall. The vessels divided in this last stage of the operation being secured, the wound was well washed with a solution of bichloride of mercury (1 to 1000), covered with carbolyzed gauze and a pledget of salicylized cotton. Before the last of the dressing was made, it was observed that the secretions from the mouth and fauces ran down in a continuous stream, through the wound. Fearing that these secretions might find their way through the loose tracheal fascia into the mediastinum, a sponge, rendered thoroughly aseptic, with a cord attached, was passed through the upper part of the wound into the fauces, in order to receive the discharge. This was removed and replaced by others from time to time, fulfilling somewhat imperfectly the object in view.

The patient was now carried to his room, apparently suffering very little from the effects of the operation. The canula was covered with antiseptic

gauze, and the temperature of the apartment maintained as nearly as possible at 70°. Directions were also given to the nurse to keep the tube cleared of all accumulations of mucus, and to administer at proper intervals through the œsophageal tube, from half a pint to a pint of peptonized milk. The patient passed a fairly comfortable night, sleeping at intervals from twelve to six A.M.; temperature, 99 $\frac{3}{4}$ °.

Feb. 3. Patient comfortable, pulse 100, respiration 24. Some trouble experienced from irritability of stomach, the milk regurgitating through the tube, in consequence of which rectal alimentation was directed. In the course of the evening an accident occurred which came well nigh proving fatal. A quantity of fluid was suddenly rejected by the stomach, a portion of which ran into the canula causing asphyxia. Fortunately the surgical resident, Dr. Westcott, was near at hand and promptly rendered the necessary relief.

4th. Patient exhibiting some signs of exhaustion, considerable restlessness, respiration 34, temperature 104°. Suppositories of quinia ordered and one ounce of whiskey every three or four hours.

5th. Increasing exhaustion, pulse 150 and feeble, temperature 106°, respiration increasingly frequent and shallow; died quietly shortly after nine o'clock.

REMARKS.—As the friends would not allow an autopsy, it was impossible to determine satisfactorily the cause of death, whether due simply to exhaustion from heart failure, the man having been, it was said, addicted to great excess in the use of stimulants; or what is equally probable, from pulmonary congestion, an occurrence which in frequency stands at the head of the list of causes giving rise to death after excision of the larynx. Just what the relation between the operation and the succeeding pneumonia, so common, is, has not been definitely settled in my mind. It may be septic, or it may be, as alleged by some, attributable to the unavoidable injury done to the branches of the recurrent laryngeal nerves. The danger from septic causes must be greatly increased when it becomes necessary to remove the pharynx along with the larynx, as the discharges from above, instead of being conducted into the stomach will accumulate in the sulcus at the top of the chest in spite of every precaution to the contrary.

Were the operation to be repeated, I should certainly perform a preliminary tracheotomy, allowing some time to elapse before attempting the excision.

The tumor removed proved to be a tubular epithelioma, and not a sarcoma, as it was thought to be at the time of the operation.

THE LOCAL TREATMENT OF DIPHTHERIA.¹

By J. LEWIS SMITH, M.D.,

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THE opinion seems to be gaining ground in this country that diphtheria is primarily a local disease,

in most instances; this is the belief of Wood and Formad in their able report made to the National Board of Health, in 1882. The authors of this report, aided by the previous investigations and experiments of Curtis and Satterthwaite, in this city, made many original microscopic examinations. They state that they did not find bacteria in the blood and tissues of mild cases, but only in cases that reached a certain degree of intensity, and the inference which they seem to draw is that in these mild cases the disease may remain local. But I believe, whether diphtheria be primarily local or not, that when the physician is summoned, he ordinarily has a constitutional malady to treat. The exudate upon the faucial surface, containing the bacteria in countless numbers, and in great activity, is deeply seated, and is in immediate relation with the blood-vessels, so that these organisms must enter the circulation in abundance. We know, too, that in severe diphtheritic attacks nephritis frequently begins within twenty-four hours, showing that the blood is already contaminated. Moreover, when there is an incubative period of six or seven days, it is very improbable that the specific principle remains that time upon the surface where it is received, in a state of quietude. It must be in the blood, and be gradually poisoning the blood, during this period of incubation.

But whether diphtheria be primarily local or constitutional, we all acknowledge the importance of local treatment. In selecting the local remedies, I believe it should be a principle to guide us, that nothing should be used which irritates, for if we employ irritating measures, and increase the redness and inflammation, we are liable to increase the severity of the local ailment, and, I think, the amount of exudation. Modern physicians, who have a better knowledge of the nature of diphtheria, now perceive that the older physicians, as Bretonneau and Trousseau, were misguided in their judgment, and that they did harm when they applied powerful acid and other agents to the faucial surface in the belief that they burnt away the disease, nor should we, in my opinion, attempt to remove the pseudo-membrane by forcible means, since we are able to destroy by local treatment, which is not severe, all the micro-organisms in it, and render it inert. The application to the fauces should be made either by the hand-atomizer, a camel-hair pencil, or a small syringe. The sponge of the probang is too rough and is likely to cause forcible detachment of the pseudo-membrane, irritate the surface, and, perhaps, produce more or less hemorrhage.

Many antiseptic and disinfecting mixtures which fulfil the indications mentioned above, have been recommended for treatment of the fauces. For many years I have used the following, which, though unpleasant to the child, does not irritate, and it readily penetrates the diphtheritic exudate, disinfecting it and rendering it an inert mass; it immediately destroys the life, and puts a stop therefore to the movements of the microorganisms, not only in the pseudo-membrane, but in the muco-pus which bathes the pharyngeal surface. This effect I have ascertained by microscopic examinations.

¹ Remarks made on Dr. Billington's paper before the New York Academy of Medicine, March 15, 1887.

R.—Acidi carbolici gtt. x.
 Liq. ferri subsulphat. ℥iij.
 Glycerinæ ℥ij.—M.

It is conveniently applied by a large camel-hair pencil, two or three times daily, or in malignant cases oftener. It is a powerful astringent, and always after its application a considerable quantity of pseudo-membrane and congealed muco-pus is brought away, and it therefore gives greater satisfaction to the parents than almost any other application. Diluted by an equal quantity of water, it may be used in the atomizer. Perhaps the following formula is as beneficial as any for more frequent use:

R.—Aqueæ chlorinæ ℥j.
 Sodii bicarbonat. ℥ss.
 Mellis } aa ℥ss.
 Glycerinæ }
 Aqueæ calcis. ℥iv.—M.

This should be used in the hand-atomizer every hour or second hour, and if the instrument work well, I have found three or four compressions of the bulb sufficient. As alkaline solutions dissolve pseudo-membrane, the solvent action of the lime-water is, of course, increased by adding the sodium bicarbonate. Trypsin may be employed in the mixture, since its solvent action, unlike pepsin, is not impaired by the alkaline medium, but it is expensive, is not soluble, and must be added sparingly so as not to clog the atomizer. In the declining stage, when the amount of pseudo-membrane is diminishing, the atomizer need not be used so frequently.

Nasal diphtheria is properly receiving more attention than was bestowed upon it a few years ago. In not a few instances the first manifestation of diphtheria is in the nostrils, and I have noticed that in many instances it is not diagnosed, and is supposed to be a simple coryza until three or more days have elapsed, so that the proper treatment is not employed until the pseudo-membrane begins to appear on the faucial surface, or around the entrance of the nostrils, which may not be until four or five days have elapsed.

Nasal diphtheria is a dangerous form of the disease, because septic absorption is very liable to occur from the nature of the tissues involved, so that early and frequent local treatment is important. The Schneiderian membrane is midway in sensitiveness, as it is in position between the conjunctiva and pharynx, so that a wash which is proper for the fauces, might be too irritating for the nostrils. I do not employ the potassium chlorate for the nostrils, because it is in my opinion too irritating. We must prescribe a wash that does not possess irritating properties, and is at the same time actively antiseptic and disinfectant. The following is the formula which I employ:

R.—Acidi borici ℥ij.
 Sodii borat. ℥ij.
 Sodii chloridi ℥j.
 Aqueæ Oj.—M.

Any wash prescribed for the nostrils should always be used tepid, and it is important that it be made with the proper instrument. If the child lies upon

its back, the application may be made with a small glass or gutta-percha syringe, a bulb with a stem, or even a large straight medicine-dropper. With the use of such an instrument the patient must lie on the back, for if he do not the upper nasal cavity will not be reached. If the point of the instrument be too sharp and liable to injure the Schneiderian surface by the movement of the head, this result may be prevented by drawing India-rubber tubing over the tip. The preferable instrument, however, seems to be the hand atomizer, with a bulbous tip, and six or eight forcible compressions should be made at each sitting.

I am convinced that much of the success in treating the different forms of diphtheritic inflammation—nasal, pharyngeal, and laryngeal—by the spray depends on the instrument used. Some of the instruments have too weak a bulb, some become quickly clogged and are soon out of order. Many young children resist their use, and when the fauces are treated most of the spray is received upon the tongue. The shops sell one instrument having a bulbous gutta-percha tip, half an inch in diameter, which serves as a tongue depressor, and which throws a heavy spray. It has the name Millard's, and if it continues to be made with a strong firm bulb, the pharynx, nostrils, and larynx can be satisfactorily treated by it. The tongue being depressed by it does not intercept the spray. In spraying the larynx, of course, compression should be made at each inspiration.

The following is probably as safe and useful a prescription as any for the treatment of the nostrils, and it should be used in ordinary and severe cases as often as every second hour. Perhaps, salicylic acid might be profitably substituted for the boracic.

R.—Acidi borici ℥j.
 Sodii borat. ℥ij.
 Sodii chloridi ℥j.
 Aqueæ Oj.—M.

The local treatment of laryngeal diphtheria or diphtheritic croup is so important, and so much is to be said in reference to it, that it cannot be expected to be a subject for discussion this evening, but I may call attention to the importance of observing at each visit whether there be the least change in the voice of the patient, for I am certain that if the proper alkaline inhalations be employed as soon as the least hoarseness is apparent, when there is only redness of the laryngeal surface, or, perhaps, a thin pseudo-membranous film, croup may, in many instances, be prevented.

Before closing, I wish to caution members of the Academy in regard to the employment of pilocarpine in the local treatment of diphtheria. In some of the medical journals pilocarpine administered internally is recommended for its supposed local action, in producing an abundant mucous secretion, which aids in detaching the pseudo-membrane. I have witnessed its employment for this purpose, with the most disastrous consequences. The action of the heart became feeble, the bronchial tubes and the alveoli were soon filled by the secretion or serous exudation, extreme dyspnoea suddenly occurred, and

the patient, who a few hours before was in a comfortable state, perished with such symptoms as occur in extreme oedema of the lungs. Useful as is pilocarpine in nephritis, it does not appear to be the proper remedy in the active period of diphtheria, and its use seems to be extremely hazardous.

AUTOMATIC PISTOLSHOT AFTER SUICIDAL WOUND OF BRAIN, AND ITS POSSIBLE MEDICO-LEGAL RELATIONS.

BY ALFRED A. WOODHULL, M.D.,
SURGEON U. S. ARMY.

P. C. was found in bed about 9.30 A. M., January 27, 1887, unconscious, with a penetrating pistol-wound near the right parietal protuberance, from which there had been profuse hemorrhage. He was lying on his back with all his limbs perfectly extended, and his right hand tightly grasped a self-cocking revolver (calibre 32) with the finger on the trigger. This was so firmly held as to require some force and patience to disengage it. Two chambers of the pistol were discharged, the empty shells remaining. At the autopsy the fatal bullet was found to have passed transversely and slightly upward, perforating both lobes of the cerebrum and contusing the inner table of the opposite parietal bone. The hair near the wound was singed. The other bullet had passed through the ceiling at a point about two feet to the left and twelve feet beyond the head as the body lay. The ceiling was seven or eight feet higher than the bed, and it had been struck at an angle of about twenty-five degrees with its plane.

The question arises, Which shot was fired first? Upon one hypothesis, that in the ceiling would be a trial shot to determine whether the weapon was in good working order. Upon the other, it was due to the unconscious and automatic pressure of the finger upon the trigger, as the arm, by its own muscular action, was straightened along the body. I believe this latter to have been the case; and if it were so, it is conceivable that another person present might have been fatally wounded by this second shot. In that event the discovery of two bodies might have led to the suspicion of murder followed by suicide, while in fact there would have been suicide followed by involuntary manslaughter.

The mechanism of the self-cocking pistol, by which continuous pressure upon the trigger both cocks and discharges the weapon, must be borne in mind in discussing the case.

FORT LEAVENWORTH, February 21, 1887.

QUANTITATIVE VARIATIONS IN THE GERM LIFE OF POTOMAC WATER DURING THE YEAR 1886.

BY THEOBALD SMITH, M.D.,
OF WASHINGTON, D. C.

THE value of the so-called biological analysis of drinking water—the quantitative and qualitative determination of bacteria present—is still very unsettled. Recent investigations certainly have not contributed toward a clearer understanding of the problem, but have made it more complex. Mean-

while, statistical determinations cannot be amiss in aiding investigators in interpreting their own results. It is from this point of view that the following statistics are published without any attempt at estimating the quality of the water therefrom.

The water was drawn from a faucet in the basement of the Agricultural Department building, which was constantly in use, so that there could have been no stagnation of water in the smaller pipes. It was immediately examined according to the method of Koch—two gelatine plates being always made from the same sample of water. This was measured with flamed glass pipettes, without being diluted. The pipettes¹ were graduated by determining accurately how many drops of distilled water were required to make 1 c. c. If 51 drops were necessary and only 8 added to the gelatine, $\frac{8}{51}$ c. c. was considered taken. This method is far simpler than the one which insists upon dilution, unless the number of bacteria be very large.

From 0.1 to 0.5 c. c. of water was added, according to the probable number of bacteria present. The culture medium was the well-known beef infusion peptone gelatine containing 10 per cent. gelatine. There was always a close agreement between the two parallel plate cultures made from the same sample.

As to the results of the year's observation we first observe from a glance at the table that the number is highest in winter, in spite of the fact that heat greatly favors and cold checks multiplication.

TABLE GIVING THE MONTHLY AVERAGE NUMBER OF BACTERIA FOUND IN ONE CUBIC CENTIMETRE OF POTOMAC DRINKING WATER DURING 1886.

	Number of observations.	Average.	Rain fall (inches).
1886.			
January	2	3774	3.46
February	4	2536	2.79
March	5	1210	4.16
April	4	1521	4.21
May	3	1069	7.77
June	2	348	4.98
July	2	255	8.42
August	1	254	1.03
September	2	178	1.04
October	3	75	2.31
November	1	116	3.69
December	2	967	3.07
1887.			
January	3	882	2.19

This anomalous condition is not so difficult of explanation. In the winter the water as it reaches the city is more or less turbid, and, when shaken, clouds, composed of very minute particles, are seen. These

¹ The pipettes are easily made by drawing out, in the flame, the middle point of a piece of glass tubing about 15 cm. long and 6-7 mm. in diameter, until a narrow tube is formed $\frac{3}{4}$ to 1 mm. in diameter and about 30 cm. long. This is broken in the middle to make two pipettes. If the capillary tube be drawn out to the above size, each drop will equal from $\frac{1}{40}$ to $\frac{1}{60}$ of a c. c., the exact size being determined for each pipette. Into the other end a plug, preferably of glass wool, 2 to 3 cm. long, is introduced and the bulb of a medicine dropper drawn over the tube to give the necessary aspirating force. Immediately before use the pipette is thoroughly flamed, beginning with the glass-wool plug while it is held with the bulb between the fingers. Care must be taken lest the heat be too great and change the form and size of the orifice. If any doubt exists as to this point, it is best to graduate the pipette again *after* use, and with the sample of water to be examined if the latter should vary much in its specific gravity from distilled water.

will pass through ordinary filter paper, and when gathered together as in distilling water, the residue is made up of reddish earth. This turbidity, most pronounced in winter, gradually disappears toward summer when the water becomes very clear and limpid. The number of bacteria varied with the change in turbidity, being highest when the suspended matter was most abundant. This fact impressed me so strongly after a number of observations that it became possible to anticipate quite accurately the number of bacteria present by looking at the water in the tube with transmitted light.

It seemed reasonable to conclude that whatever agency brought the suspended earth also brought the bacteria, and that the earth contained the bacteria. Throughout the winter of 1886 I noticed that after heavy rains the turbidity increased quite suddenly, this fluctuation, of course, producing a corresponding rise and fall in the number of bacteria. The rain, washing down the soil from the surface drained by the tributaries of the river was thus the cause of the turbidity. But was there any relation between rainfall and the number of bacteria? Through the kindness of the Signal Office I obtained the data given in the third column of the table: Comparing the second and third columns, the relation is certainly not on the surface. The heaviest rains occurred in July, but the number of bacteria did not rise perceptibly and no turbidity appeared. The only explanation which suggests itself is that which must be sought in the changed condition of the surface of the soil in winter and summer as regards vegetation. The precipitated water is caught by the foliage of trees, by the grass and herbage, which clothes the soil everywhere. The soil itself is at the same time more firmly bound together by the vegetation itself. In winter all this is changed. The absence of vegetation leaves the loose soil ready to be washed into streams by rain and melting snow, carrying with it the bacterial vegetation.

The majority of bacteria carried into the river are, no doubt, harmless, but what is to prevent the infectious microorganisms of typhoid and other diseases from being washed down and carried into our houses with the suspended matter? The danger is thus not constant but only occasional. The number of bacteria may have no direct significance, but it is certainly an index of the possible danger. It is safe to assume that Potomac water free from suspended matters contains from 50 to 200 bacteria in 1 cc. This will, no doubt, be found a low average for unfiltered river water when more statistics have been collected of other streams, whose water is used to supply towns and larger cities.

No qualitative examination of the different kinds of bacteria was made for want of time. Liquefying bacteria were constantly present, when the bacteria were few in number, as in summer, as many as 50 per cent. were liquefying; so that counting was somewhat difficult and many plates were lost by the confluence of the large colonies and the total liquefaction of the gelatine layer. When the number was very high, as in winter, the liquefying forms did not increase in the same proportion, but

formed only 5 to 10 per. cent. of the whole. These observations led to the inference that they are constant inhabitants of the water, and that attention must be directed to them, first of all, if individual forms are to be more closely examined.

MEDICAL PROGRESS.

A NEW TREATMENT FOR INCISED WOUNDS OF THE THROAT PENETRATING THE AIR-PASSAGES.—DR. D. S. YOUNG, surgeon to the Cincinnati Hospital, describes his method of treatment as follows in the *Lancet-Clinic* of March 5, 1887.

The method we have adopted to secure a safe and speedy relief in these cases, after the hemorrhage is controlled and the injuries to the internal appendages attended to, is to proceed and close the wound both internally and externally, so as to render it impervious to air and fluids. This is accomplished by uniting the incision in the windpipe with catgut sutures passed through the cartilage, including the mucous membrane; they should be placed one-eighth of an inch apart and firmly tied, and the ligature cut close to the knot.

When the air-passage is completely or extensively divided, two or three silk sutures might be placed one on each side and one in front, to sustain better the parts in position, as they will not be affected by moisture and become relaxed as the gut is liable to be. The external wound is cleansed, its margins brought together and secured with pins, or wire sutures. The head is brought slightly forward, and held by a cap with tapes fastened to a band around the chest. In cases of violent delirium, Christopher's plaster-of-Paris dressing is invaluable, as it secures perfect rest to the parts, and leaves the throat freely exposed. No especial dressing is required further than occasionally sponging the surface. The patient speaks and swallows immediately after the wound is closed, but should be restrained as much as possible. The external sutures can be removed after five or ten days. The internal catgut and silk are left undisturbed and are absorbed, or thrown off into the windpipe. No irritation or spasmodic coughing has been excited by their presence.

XYLOL IN VARIOLA.—OETVÖS, of Budapesth, has selected from 465 cases of smallpox 315 of severity, with whom he used xylol and obtained excellent results. The general anæsthetic effect of xylol was especially noticeable. The contents of the pustules coagulated in three or four days in masses which showed, when incised, a fibrinous base, with proliferation of the Malpighian layer. The pustules were rarely confluent, and only in the most severe and fatal cases. The drying of the pustules was without complications; scars formed very rarely; digestion was but little disturbed. The expired air had an odor of xylol, which produced an agreeable deodorization. An antipyretic or antiseptic effect was not observed. Fever generally ceased on the twelfth day; recovery was accomplished in thirty-two days; death, when it occurred, was on the eighth day.

The remedy was given in wine (added *guttatim*), 6 times daily, for 12 days. Adults took from 30 to 45 minims in 24 hours, the total amount taken reaching 6 drachms. Children took the drug readily in wine;

adults used fruit essences and aerated waters. The following is a useful formula :

R.—Xyloli puri grs. 45.
Aq. menth. pip.,
Aquæ destill. aa 3 12½.
Syrup. cinnamoni,
Mucil. gummi arab. . . . aa 3 2½.

M. D. S.

Sig.—Tablespoonful every two hours.

The mortality, including 37 cases of hemorrhagic smallpox, was 22 per cent.; which the writer considers a good result, and due to the drug used.—*Therapeutische Monatshefte*, March, 1887.

Xylol is obtained from the oily liquid separating from diluted crude wood-spirit, and from the light oil of wood tar or coal tar. It is a thin, colorless, oily liquid, resembling benzol in odor, has a burning taste, and is insoluble in water, but dissolves readily in alcohol.—*National Dispensatory*.

THE TREATMENT OF COLDS.—DR. WHELAN, in *The Practitioner* of March, 1887, writes as follows;

The usual "coddling" treatment of colds, except in the very old, very young, or very delicate, is a mistake. A person suffering from a catarrh should certainly be warmly clothed and avoid draughts; but by shutting himself up in a warm room, by taking warm air baths, and lowering medicines, he only promotes the development of the exciting cause of the affection.

"Feed a cold, starve a fever." There is a deal of wisdom in the first part of this advice. A person with a catarrh should take an abundance of light nutritious food, and some light wine, but avoid spirits, and, above all, tobacco.

Now as to medicines. All depressants should be avoided. For some time I was in the habit of taking a mixture recommended by Dr. Jukes Styrap, composed of minute doses of morphine, antimonial wine, and potassium citrate. This, beyond doubt, always subdued the acute inflammatory stage, but I have no hesitation in saying I was depressed by its action, and rendered liable to relapses and renewals. Personally I have found the large dose of an opiate in the early stages, as extolled by Sir Thomas Watson and Dr. George Johnson, very unpleasant, and of but little use.

Trying to avert an attack by a large dose of potassium iodide failed in my hands. The bromides were useless through all stages. Antiseptic inhalations and spraying afforded temporary relief from the distressing symptoms, but failed to cure.

Belladonna, quinine, and arsenic I have found useful when given separately—not so much in large as in small doses. When combined I believe them to be nearly specific—prophylactically and therapeutically, if I may so speak,

The formula I invariably use is as follows :

R.—Quininæ sulphatis gr. xvij.
Liquoris arsenicalis ℥xij.
Liquoris atropinæ ℥j.
Extractæ gentianæ gr. xx.
Pulveris gummi acaciæ, q. s. ut fiant pilulæ xli.

Sig.—One every three, four, or six hours, according to circumstances.

If these pills be commenced in the early stage of a common cold—i. e., when the affection is as yet confined to the nose and pharynx—the affection will be nipped in the bud. At starting one pill should be taken every three or four hours, and later on every six. If a catarrhal subject has a box of these pills always at hand, he has, I believe, a weapon wherewith to meet and defeat his enemy. The longest time I have seen a cold last whilst the patient was fairly taking these pills was three days. How the remedy acts I do not know, except it be as a powerful nervine and general tonic, bracing the patient's tissues up to resist the attacks of the exciting cause of the affection.

TINCTURE OF IODOFORM.—PROS gives the following formula for this tincture, which is convenient for use and may be readily preserved :

Iodoform 1 part.
Potassium iodide and glycerine
(each) 70 parts.
Alcohol (at 36° C.) 200 "

The iodoform and iodide are finely powdered, the glycerine is added, and the whole mixed in a homogeneous mass; the addition of the alcohol makes a complete solution.—*Journal de Médecine*, March 6, 1887.

STATISTICS OF CASES OF EXTRACTION OF CATARACT BEFORE AND SINCE THE INTRODUCTION OF COCAINE.—DR. E. T. COLLINS, of the London Ophthalmic Hospital, writes as follows in the *Hospital Reports* of that Institution for January, 1887 :

So much has been said and written of late on the evil effects of cocaine, that I think it may be interesting to make a comparison between the cases of cataract extraction occurring in the hospital during the year 1883, before the introduction of cocaine, and those treated in 1885, when cocaine made up with a saturated solution of boracic acid was used in almost all cases. In making this comparison, I have counted the number of cases of panophthalmitis, the number of cases of loss of vitreous, and the number of cases of severe iritis, with the following results :

In 1883 there were 225 cases of extraction of senile cataract : 14 suppurated, or 6.2 per. cent. ; 32 cases lost vitreous, or 14.2 per. cent. ; and 16 cases had severe iritis, or 7.1 per. cent. In 1885 there were 264 cases ; only 3 suppurated, or 1.13 per. cent. ; 22 cases lost vitreous, or 8.3 per. cent. ; and 9 cases had severe iritis, or 3.49 per. cent.

Mr. Morton, in the *Royal London Ophthalmic Hospital Reports for 1879*, vol. ix., published the results of 146 cases of extraction of cataract occurring in 1875 and 1876 ; of these 8 suppurated, or 5.47 per. cent. ; 6 lost vitreous, or 4.1 per. cent. ; and 18 had severe iritis, or 12.3 per. cent. These figures speak for themselves.

TOTAL EXTIRPATION OF THE UTERUS AND NE-PHRECTOMY.—DR. SCHMIDT, of Cologne, relates a case in which these formidable operations were successfully performed at one sitting. The patient was forty-nine years old, and had given birth to four children, all still-born ; and the menopause had occurred two years previously. For a year she had suffered from severe,

irregular uterine hemorrhage. Carcinoma of the cervix, involving the vault of the vagina, was detected. The uterus was removed, but the operation was rendered very difficult by abundant, cord-like adhesions between the fundus and the pelvic walls. The peritoneal cavity had to be very widely opened. On careful examination of the extirpated uterus, it was found that an inch of the right ureter had been cut away with that organ. The vagina was plugged with iodoform gauze, and the right kidney was removed through a lumbar incision. The patient made a good recovery. Dr. Schmidt states that total extirpation of the uterus is quite inadmissible, when it appears at all probable that a ureter is likely to be injured, not that the necessary nephrectomy would greatly increase the risk, but rather because the extirpation of the uterus would be of little service in such a case, as the cancerous infiltration would be extensive, and rapid recurrence would be certain. Yet, when the ureter has been injured, he thinks that nephrectomy is preferable to sewing the proximal end of the ureter to the vaginal walls, as this leads to inflammation and sloughing, and renders nephrectomy necessary later on. In Dr. Schmidt's case, it must be noted that the disease had distinctly involved the cellular tissue to the right of the cervix.—*British Medical Journal*, March 12, 1887.

THE TREATMENT OF GASTRO-INTESTINAL ATONY.—GERMAIN SÉE prescribes as follows in *L'Union Médicale* of March 10, 1887:

R.—Magnesiæ calcinatæ,
Cretæ præparatæ aa ʒiv.
Colombo pulv. gr. xv.
Vanillæ pulv. gr. viij.—M.

Sig.—Half teaspoonful to coffeespoonful before each meal for persons troubled with gastro-intestinal atony with tympanism. In some cases it is well to prescribe in addition 5 or 10 drops of the tincture of nux vomica in black coffee after meals.

A saline purgative should be taken from time to time as required.

A "SPECIFIC FOR DIABETES."—At a recent meeting of the Société de Thérapeutique, M. MARTINEAU stated that he had been treating diabetes for the last ten years, with almost invariable success, by a method which he had borrowed from a practitioner now dead. He had hitherto made no communication upon the subject, because he had wished to be perfectly certain that his conclusions were not premature. The treatment consists in the administration of a solution of carbonate of lithia and arseniate of soda in aerated water, to the exclusion of all other drinks. Besides taking this with his meals, the patient uses the same as a beverage when thirsty at other times. M. Martineau affirms that this regimen has cured sixty-seven of seventy diabetic patients he has had occasion to treat.—*Lancet*, March 19, 1887.

PREPARATIONS OF TEREbene.—Terebene is a derivative of turpentine produced by distillation in the presence of sulphuric acid. It is a colorless, volatile oil having a rather agreeable, thyme-like odor and acquires with iodine a dark green appearance.

It has been extensively used in chronic bronchitis, attended by fetid expectoration.

VIGIER, in the *Revue de Thérapeutique* of February

15, 1887, gives the following formulæ for useful combinations of this substance:

R.—Terebene ʒxj.
Gummi acaciæ ʒiij.
Aquæ ʒxv.
Sacch. pulv. ʒiijss.
Gummi tragacanth. pulv. ʒij.

An emulsion of the terebene, gum acacia, and water is to be made, to which should be added the sugar and gum tragacanth previously mixed. A homogeneous mass should be made of the whole, which is to be divided into 100 troches or capsules.

The emulsion of terebene is a preparation whose decided taste is masked with great difficulty. The following disguises the sharpness of its flavor with fair success:

R.—Terebene ʒiv.
Gum. acaciæ pulv. ʒiij.
Aquæ ʒxv.
Syrupi zingiberis ʒviijss.

Which may also be prepared in 100 troches or capsules.

COMPARISON OF THE METHODS OF REMOVAL OF CATARACT WITH AND WITHOUT IRIDECTOMY.—DR. H. KNAPP, of New York, writes as follows on this subject in the *Archives of Ophthalmology* for March, 1887:

If we compare the simple extraction with the extraction combined with iridectomy, we find as advantages of the former the following:

1. It preserves the natural appearance of the eye.
2. The acuteness of vision, other things being equal, is greater.
3. Eccentric vision and "orientation" (correct localization of objects in the visual field) are much better, adding a great deal to the comfort and safety of the patient.
4. Parts in direct connection with the ciliary body, such as shreds of the capsule and iris, are not so liable to be locked up in the wound and thus transmit morbid conditions to the most vulnerable part of the eye, the ciliary body.
5. It may not necessitate so many after-operations.

As disadvantages may be mentioned:

1. The technique of the operation is more difficult in all its parts: (a) The section must be larger, to let the lens pass through an aperture, the size of which is diminished by the iris lying in it; it must be more accurate to secure coaptation, and it must be more rapidly performed in order to prevent the iris from falling before the knife. (b) The opening of the capsule requires a deeper introduction of the cystitome into the anterior chamber. (c) The expulsion of the lens is more difficult, and (d) the cleansing of the pupillary area is much more troublesome than in the combined extraction.
2. Prolapse of iris and posterior synechiæ are more numerous.
3. It requires a quieter and more manageable patient during and after the operation than is needed in the combined extraction.
4. It is not applicable to all patients, whereas combined extraction can be used as a general method.

THE USE OF UNCOOKED MILK.—The question of the habitual use of uncooked milk which prevails is

one which demands serious attention. Again and again have milk epidemics of typhoid fever, scarlet fever, and diphtheria shown conclusively how severely the incidence of the disease in question has been felt upon those using uncooked milk, as opposed to those taking milk only after it has been boiled or otherwise cooked. At one time it was thought that the matter involved only the question of the cleanliness of the dairy, and the freedom of those engaged in the management from communicable disease; and the mere fact of milk coming from country dairies has been held to be sufficient guarantee of its wholesomeness. As a matter of fact, our experience goes to show that the danger is at its greatest according as dairies are situated in the more remote and rural localities; for it is precisely in scattered rural areas that first cases of ill-defined sore throat and other affections in the families of those having to do with cows and milk are most likely to pass unnoticed. But recent experience has shown that disease in the human subject, whether unrecognized or concealed, is not the only—perhaps not the greatest—danger that has to be contended with in connection with our milk services. It has now been shown that the cow herself may suffer from a disease which at present is rarely, if ever, regarded as of any importance by dairymen, and which may give to the milk, at the actual moment of entering the pail, the power of producing scarlet fever in those who consume it in its raw state. Just as the excellent arrangements which have been made for the medical supervision of dairies must at times fail to detect certain cases of disease in the human subject, so must any veterinary or other inspection of cows fail in certain cases to prevent scarlatina-producing milk from being despatched from the dairy. We would, therefore, once again urge the importance of using milk only after it has been boiled or otherwise cooked. And for those who have not habituated themselves to the somewhat altered taste of boiled milk as a beverage, we may note that if milk be boiled immediately after its delivery by the milkman and then be set aside in a cool place for some six hours, the taste which is sometimes objected to will be found to be almost entirely removed; and not only so, but milk so treated keeps good and wholesome for a longer period than does unboiled milk.—*Lancet*, March 19, 1887.

SCHÉDE'S METHOD OF DRESSING WOUNDS.—**PROF. MIKULICZ** communicates to the *Przeglad Lekarski* an account of fifty cases of surgical operations which were treated by the method recommended by Dr. Schede at the last surgical congress in Berlin—viz., to allow blood to fill the wound and to lie between the lips after they are brought together, any deficiency in the quantity of blood being remedied by the use of the knife, the idea being that the blood either actually becomes organized or serves as a protection for the granulations as they are formed. The wound is covered with protective, to prevent evaporation. Professor Mikulicz's observations included six resections of joints, four amputations, six dissections, two ligatures of arteries, seven extirpations of large tumors, etc. In thirty-six of the fifty cases union took place without suppuration, in four there was extensive formation of pus, in five superficial suppuration starting from the points of the suture, and in the remaining cases pus had existed previously to the opera-

tion, and the disinfection at the time not having been complete, it continued subsequently. The general condition of the patients was highly satisfactory, even in those cases where suppuration occurred, the temperature in no case rising much above normal. The dressings were not removed or changed for at least a fortnight, sometimes not for a month. This appears to be of great advantage in the case of bone and joint operations, where complete immobility of the parts is a desideratum. Other specified advantages attributed to this plan are that wounds attended with a loss of substance rapidly fill up, and the cicatrices that form are peculiarly soft and smooth. Professor Mikulicz does not find, as Schede did, that the existence of silver sutures in osseous lesions has any unfavorable influence on the cicatrization of the wound. He remarks that it is important not to bind the external dressings too tightly to the wound.—*Lancet*, March 19, 1887.

ANTI-ASTHMATIC CIGARETTES.—**HIRTZ**, in *L'Union Medicale*, of February 24, 1887, gives the following prescription for cigarettes to be smoked to relieve the dyspnoea of asthma:

R.—Ext. stramonii	gr. 75.
Alcohol	3 1/2.
Tabaci foliarum	33.
Potass. iodid.,		
Potass. nitrat.	aa gr. 75.

100 cigarettes are to be made from the above.

THE INTRA-TRACHEAL INJECTION OF FLUIDS.—**SEHRWALD**, of Jena, summarizes his experiments as follows:

1. The perforation of the trachea of a dog with a Pravaz syringe is not dangerous, is easy, and not painful.
2. The reaction of the entry of fluids is cough. This can be diminished by warming the fluids, by narcosis, and by custom.
3. The volume of the introduced fluid may be, for a dog, 750 grains.
4. Efficient fluids are sublimate, 1:5000; acid bor., 5:100; acid salicyl., 1:100.
5. By varying the position, the fluid can be introduced into every part of the lung.
6. The fluid pervades the alveoli, the peribronchial region, the bronchial glands, and the kidneys.
7. The absorption by the lung is quicker than that by the tractus intestinalis, or by the subcutaneous tissues.
8. The lung can absorb in five days four times its own weight.
9. The effect of drugs is, therefore, quicker if they are introduced by the lungs than by any other way.
10. Injecting into the lung is like injecting directly into the circulation.

The author hopes that it will be possible to use this method for the treatment of lung diseases.—*Journal of Laryngology*, March, 1887.

PRESCRIPTION FOR ASTHMA.—**DR. CAZENAVE DE LA ROCHE** has found iodide of potassium combined with cow's milk a very efficient remedy for asthma. It should be given as follows: distilled water, four and three-quarter ounces; iodide of potassium, two drachms. One tablespoonful of the solution in a cup of milk twice a day.—*British Medical Journal*, March 12, 1887.

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THE TREATMENT OF INCOMPLETE ABORTION.

THE treatment of cases of abortion when, after the expulsion of the embryo, or foetus, the rest of the ovum, or a considerable portion of it remains in the uterus, is by no means uniform. Some practitioners employ immediate intervention, endeavoring at once to empty the uterus, using, if necessary, instruments for the purpose. Others advocate an expectant plan, content with daily antiseptic vaginal injections, waiting until signal for action is given either by hemorrhage or by offensive discharge; in either of the latter conditions delay is no longer permitted, but removal of the offending material from the uterus must be effected, and followed in some cases by intrauterine antiseptic injections.

Of course, the nearer the time of miscarriage is to that of foetal viability, the more the phenomena are similar to, or identical with those of premature delivery, and the discharge of the placenta is effected by the same means, should interference be necessary, that are employed when delay occurs in the third stage of labor. But it is the cases of abortion occurring earlier in pregnancy, for example, from six weeks to three or four months, and which are incomplete, that furnish a sort of debatable ground as to practice. It is well to know what nature does in the large majority of these cases. Where rest and proper precautions are taken, the offending body is expelled usually within a few days, the interval rarely being a week or two, and no injurious consequences are observed. In quite exceptional cases there is no history of any expulsion, either spontaneous or artificial. Thus, in conversing with one of the most eminent obstetricians as to the treatment of incomplete abortion, he stated that he neither

advised nor practised active intervention, and then, as illustrative of his views upon the subject, stated that several years before his wife had such an abortion at three months, and there was no interference; the retained placenta and membranes never made their appearance, and yet her convalescence was prompt, and her health had remained subsequently perfect. Further, occasional cases of either severe hemorrhage, or of offensive flow and elevation of temperature, sometimes preceded by a chill, though this is most frequently absent, do occur, and, as we have previously said, demand prompt and active intervention. These are the cases which are adduced by the advocates of immediately emptying the uterus, if the abortion be incomplete, as an argument for their practice, and against expectation. But they forget the much larger number of incomplete abortions treated by the expectant plan where no such accidents occurred; and they forget, too, that the advocates of expectation would be just as active in intervention as they, in such small minority of cases presenting the symptoms just mentioned, and that the results are almost invariably favorable.

In further considering this subject, we desire to call attention to the method pursued by CHÉRON, as given in the February number of the *Revue Medico-Chirurgicale des Maladies des Femmes*, and to the practice of TARNIER as presented in his work upon obstetrics, the second part of which has recently been issued. Chéron advises, in case the placenta be retained, that the patient be placed upon her back, the legs flexed upon the thighs, and the latter strongly flexed upon the abdomen, for he claims that this position causes the neck of the uterus to lie in the axis of the vagina and thus in part remove obstacles to the expulsion of the placenta. The position alone often determines the discharge of the foetal appendages. He states that it is useless to pull upon the cord, for this readily breaks, and dangerous to attempt artificial delivery with the hand or with the curette. But if at the end of twenty-four hours the expulsion fails, the patient should be put in the obstetric position, the speculum introduced, and hot water thrown upon the cervix, through which the uterus almost always contracts, and the placenta is expelled. But if this method fails, intrauterine galvanization is employed, the negative pole being introduced into the cervical canal, and the positive pole connected with a large metallic plate, covered with chamois, placed upon the hypogastrium, and a current of fifteen to twenty milliamperes employed, the current being made regularly intermittent. The uterus very soon contracts, and complete expulsion of the foetal appendages results. It is asserted that the employment of these means, which are inoffensive and which every practitioner can use, never fails.

Tarnier does not advocate immediate interven-

tion, and he sustains his position by the results of cases treated according to the expectant plan at the Charité and the Maternité. Twenty-two cases were under observation at the former, the placenta being retained after the foetus was expelled, and hemorrhage did not occur when the former was discharged; and in three women who had incompletely aborted and been brought to the hospital with fever, the fever soon disappeared after the employment of antiseptic injections. At the Maternité there were twenty-four cases of retention, two of the women, one of whom was brought to the hospital sick, suffered from infection; all recovered except one, who died from pneumonia fourteen days after abortion. He asserts that if all untimely intervention be abstained from, incomplete abortion rarely gives rise to the complications which to-day are so much feared, especially when antiseptic injections are employed.

He next considers the treatment by forceps and curettes, and regards it as often inefficient, and sometimes dangerous; the curette, for example, acts blindly, so that the sound mucous membrane of the uterus is liable to be injured, and thus entrance of septic germs may occur. In some cases where dilatation of the cervical canal was required for the use of instruments within the uterus, very serious rents of the cervix have been made. He advises then, in incomplete abortion, simply "antiseptic toilets and vaginal injections," two or three times a day, resorting to intervention only when some complication occurs.

The expectant plan of treatment of incomplete abortion is, we believe, that which is followed by most practitioners.

OPERATION FOR EXTRAVASATION OF BLOOD WITHIN THE CRANIUM.

IN THE MEDICAL NEWS for December 25, 1885, and May 8, 1886, we discussed the subject of the proper treatment of injuries of the head followed by intracranial hemorrhage, and called especial attention to the valuable papers on this subject by Wiesmann, Krönlein, and Ceccherelli.

The opinions expressed by these surgeons, which have commended themselves to our judgment, have recently had a striking confirmation in the experience of SCHNEIDER, of Königsberg, who, in the *Archiv für klinische Chirurgie*, Bd. xxxiv. Heft 3, publishes an account of a case of punctured wound of the skull, followed by aphasia and hemiplegia, in which he trephined and removed an intradural blood-clot from an opening in the middle cerebral artery, and effected a cure.

The patient was a young man eighteen years old, who was stabbed with a knife in his left temple, and who had, almost immediately, paralysis

of the right side of the face and of the right arm and leg. Four days afterward he was brought into the hospital in Königsberg. He then had a small, almost healed wound over the third frontal convolution. He was perfectly conscious, and could answer by signs, although he could not speak a word. He could and did write with his left hand, with increasing facility for several days, although he had been right-handed before. As the hemiplegia increased without febrile symptoms, Schneider attributed it to an accumulating extravasation of blood, and operated for its relief on the ninth day after the injury. He trephined the skull at the seat of the wound, opened the dura, removed a small clot, found the first branch of the middle cerebral artery spurting in the substance of the brain, seized it with forceps and ligated it with catgut. The wound was then cleansed, the opening in the dura was sutured with fine catgut, the soft parts covering the skull were also sutured, a drainage tube was inserted, and a Lister bandage was applied. The wound healed by first intention. On the third day after the operation the patient began to articulate, and in four weeks he spoke perfectly. Part of the hemiplegia disappeared more rapidly, the leg and arm recovering in eight days; but the facial paralysis was not wholly gone after a lapse of six months.

It will no doubt strike those who observe the points of this case in the light of what is known concerning the phenomena of extravasation of blood within the skull, that the suddenness of the appearance of aphasia and paralysis might have led Schneider to diagnosticate an injury to the brain beside a hemorrhage above or below the dura.

In intracranial hemorrhages, uncomplicated by an immediate injury to the brain substance, the onset of the symptoms is gradual; on the other hand, a sudden aphasia or paralysis indicates that the brain substance itself has been injured. This might have been recognized at once in the case just described, and the fact that it was not is the only error we note in connection with it. The diagnosis of a persistent bleeding was in accord with our present knowledge of injuries of the cranium, and was abundantly corroborated by the disclosures and the results of Schneider's brilliant operation.

UNTOWARD EFFECTS OF COCAINE.

THE varied and constant use of the hydrochlorate of cocaine by almost every practitioner of medicine renders imperative attention to the fact that this drug may act as a poison, since a very large number of well-authenticated cases of this character are now on record. While almost every reader of the current medical journals can recall the report of some case in which serious symptoms asserted themselves, the literature of the subject is so scat-

tered that little attention has been given to it. Within the last few weeks, however, quite a large number of cases have been recorded in various medical periodicals, especially in Great Britain.

One of the first things which strikes the reader of these reports is the fact that no particular line of symptoms appears to be characteristic, and that the doses reported as producing toxic symptoms vary even more than the unlooked-for results themselves.

In England, where the practice of using cocaine hypodermatically for the purpose of producing local anæsthesia seems to be carried on much more fully than in this country, surgeons have reached the most varied conclusions as to the dose which may be safely given in this manner. Some insist that as much as four grains may be given under the skin, while others report very serious poisonings from the use of one grain. Thus, MAGILL records the case of a strong, healthy man to whom he gave, previous to an operation for phimosis, a hypodermatic injection of one grain. In fifteen minutes the man was extremely pale, and suffered from severe præcordial pain. The pulse was very slow and intermittent, but did not resemble that present when syncope is impending; complete recovery took place in twenty minutes. More remarkable even than this is the record of seventeen cases gathered by ZIEM, of Dantzig, in 1885, in which decided toxic effects occurred simply through instillations of the drug into the eye, and in which the amount of cocaine reaching the general system must have been very small indeed.

The symptoms which assert themselves are, as has just been stated, remarkable for their variety, and they range in severity from slight systemic depression to temporary blindness, or even syncope and collapse. ROBSON records a case in which aphasia followed its use in the removal of a nasal polypus, while LITTLEWOOD has seen great loquacity, and finally syncope, follow the hypodermatic administration of sixty minims of a six per cent. solution.

The interesting question in regard to this matter is the cause of the production of these symptoms and the best method for their avoidance. Unfortunately, there seems to be no fixed rule on which we can depend, since the causes themselves are as yet not by any means understood. Naturally idiosyncrasy occurs to the mind of every one as the most likely explanation, and this idea is somewhat strengthened perhaps by the various effects produced.

Again, it may be that the sudden and enormous demand has led to the placing on the market of adulterated or carelessly prepared samples of the drug, and if this be the case the reports of toxic effects should be constantly on the decrease, since at present the supply and demand are so nearly balanced. Whatever may be the explanation, it

certainly seems of the greatest importance that the profession in general be reminded that cocaine is not to be used recklessly and without proper care.

TOTAL EXTIRPATION OF THE UTERUS THROUGH THE VAGINA.

ALTHOUGH the extirpation of the uterus through the vagina for the removal of carcinoma, is a comparatively new operation, it has, in the short term of its existence, shared the advance experienced by those other operations of gynecology which have been converted, of recent years, from desperate measures to perfectly legitimate and not particularly dangerous therapeutic procedures. This point is well illustrated by the statistics of 60 operations for the removal of the uterus through the vagina, published by FRITSCH in the *Archiv für Gynäkologie*, Bd. xxix. Heft 3. The mortality of the operation itself was only 10.1 per cent. and two of the deaths were hardly to be ascribed to the operation. A still more gratifying feature of the statistics is the number of women who were much benefited, some of them perhaps cured, by the removal of the cancerous womb. Of the 53 women who survived the operation, 20 remained healthy, 2 after three years, 7 after two years, 8 after one year, and 3 after ten months. This is a most satisfactory result to have achieved in dealing with a disease which of itself is necessarily fatal, even should the relief afforded be but temporary, and unfortunately this may prove to be the case, for v. Hofmeier's statistics show that three years and more of apparent health may be followed by the return of the disease.

Such a low mortality associated with a rather formidable operation must attract attention to Fritsch's method of operating, which may be thus described: The lateral vaginal vault is first incised and the lateral attachments of the uterus severed, the tissues being transfixed by a needle and thread and securely ligated before being cut. As soon as the uterus is free to descend about two and a half inches, the anterior vaginal vault is incised, the bladder is detached from the uterus and then, for the first time, the peritoneal cavity is opened, the uterus is tilted far forward, and the broad ligaments are secured by ligatures from above and then cut through. Finally, as the last step of the operation, the posterior vaginal wall is separated from the uterus, which is then removed, usually without difficulty. Should the uterus, however, be as large as a child's head, as it was in two of the cases recorded, considerable, but not insuperable, difficulty might be experienced in its extraction.

In view of these results, Fritsch expresses the hope that the knowledge that cancer of the womb can no longer be called an altogether incurable disease may be more widely disseminated among both the laity

and general practitioners. With such information women afflicted with this disease may seek surgical aid as soon as its existence has been discovered, before the morbid process has reached such a stage that an operation can only be undertaken as a last resort when it is merely a forlorn hope.

ETIOLOGY OF GASTRIC ULCER.

In *Centralblatt f. d. med. Wissenschaften*, No. 10, 1887, a novel explanation of the production of ulcer of the stomach is suggested by RASMUSSEN, who found in a very large number of cases furrows or grooves on the surface of the stomach caused by the pressure of the costal edge. These pressure grooves usually run obliquely from the middle of the lesser curve toward the pylorus. The serosa is often thickened, and he has seen adhesions to the diaphragm. At these points the mucosa sometimes is atrophied. In one of the Copenhagen hospitals scars of gastric ulcer occur in the bodies of 7 per cent. of the men, and from 32 to 36 per cent. of the women, and in the great majority of these cases the cicatrices have been about the middle of the lesser curve, or a little nearer the pylorus; the very situation in which the pressure furrows occur. The author thinks that the theory of a pressure necrosis much more satisfactory than the one usually adopted of thrombosis or embolism of the small arteries. The suggestion is an interesting one, and would account for the much greater frequency of gastric ulcer in women, but, like the older views, it is not free from difficulties.

At the annual meeting of the Alumni of the Jefferson Medical College held on Monday, Dr. S. W. Gross was elected President, and Dr. Austin Flint, Orator for the ensuing year. In the evening the Alumni gave a reception to Dr. Hunter McGuire, the Orator for 1886, which was largely attended.

The sixty-second annual commencement of the Jefferson Medical College was held on Tuesday, and the degree of M.D. was conferred on 187 graduates.

The South Carolina Medical Association meets at Aiken on Tuesday next, the 12th inst., and the Medical Association of Georgia, at Atlanta, on Wednesday, the 20th of April.

The Southern Medical College, of Atlanta, at its commencement, held March 3d, conferred the degree of M.D. on thirty graduates, and the Atlanta Medical College, on the following day, graduated forty-five of its one hundred and twenty-one students.

REVIEWS.

THE PRINCIPLES AND PRACTICE OF OPERATIVE SURGERY. By STEPHEN SMITH, M.D., Professor of Clinical Surgery in the University of the City of New York, Surgeon to Bellevue and St. Vincent Hospitals, New York, etc. New and thoroughly revised edition. 8vo. pp. 877. Illustrated with one thousand and five woodcuts. Philadelphia: Lea Brothers & Co., 1887.

THIS work of Dr. Stephen Smith's has been a long time before the profession, and its merits have been proven by its exceptionally large sale, eight large editions having been exhausted in less than eight years. The present edition has been thoroughly revised and it will be found to represent fully the views in regard to surgical practice as held at this time.

Time and space do not permit more than a brief notice of this valuable and almost encyclopedic volume, and we shall not attempt an analysis of its contents, but shall briefly note our impressions as derived from a careful examination of its pages. As has been stated, the work is fully abreast of the times, but whilst taking cognizance of the various new procedures which have been advocated with earnestness by different surgeons, there is a tone of judicious conservatism pervading the book which is highly gratifying to those who do not rush to extremes at every new move of doctrine. This is seen especially in regard to operations upon the stomach, intestine, and fractured patella. The author also speaks with no uncertain voice in regard to the use of antiseptics, and we think his earnest but dignified advocacy of the use of these agents will go far toward furthering their general adoption.

The general practitioner will find this work fill a place in his library or upon his desk which but few other works can, for within its covers will be found many subjects discussed which he would look in vain for in most manuals of operative surgery; in fact, this is not a manual but a comprehensive treatise. The first 120 pages are devoted to the principles of operative surgery, preparations for operation, antiseptic directions, treatment of wounds, wound fevers, etc., and the rest of the work is divided into sections corresponding to the various anatomical systems of the body, as the osseous and muscular, with a short section devoted to "Orthopædia." The whole work is up to the times, easy to read, with good type and illustrations, and is a book which will be useful to any one who may be fortunate enough to procure it.

SOCIETY PROCEEDINGS.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, March 2, 1887.

THE VICE-PRESIDENT, JOHN H. PACKARD, M.D., IN THE CHAIR.

DR. N. A. RANDOLPH read the following note on

THE IRRADIATION OF MOTOR IMPULSES.

About two years ago this question arose in my mind, If a man performs work with the muscles of (*e. g.*) his right hand exclusively, and to the point of fatigue, can

he thereafter perform as much work, of the same nature, with the left hand as he could if the right had not been previously exercised?

It will be seen that this question relates in nowise to a comparison of the work of the two hands, but to an examination of the work which may be accomplished by one hand as conditioned by the previous exercise or non-exercise of its fellow of the opposite side.

It is evident that the answer to this query is dependent on intracranial processes solely, and that such answer would throw some light upon the functional independence or interdependence of the two halves of the brain.

In order to answer the question just stated, certain conditions are prerequisite. The subject of experiment must have no conception of the object of the investigation, or he will unconsciously become a partisan of one or the other hand. He must, also, have a very strong inducement to exercise his volition to the utmost.

These conditions were fulfilled in the persons of some intelligent and vigorous convicts in the Eastern Penitentiary in this city. The stimulus was a money prize to the man who accomplished the most work in a given time. In the prosecution of these experiments I am under obligation to the courtesy and assistance of Dr. W. D. Robinson, physician to the penitentiary.

In the first series of experiments, rubber bulb syringes, identical in all their measurements, were used, and the amount of water which the men could transfer from one vessel to another in a given time was accurately measured and taken as proportionate to the work performed. Some forty observations were made by this method, with the uniform result that either hand could do more work when its exercise preceded than when it succeeded the similar exercise of its fellow of the opposite side. It was found, however, that the muscular effort could not be entirely restricted to one side of the body in this method, as great fatigue was always accompanied by a grimacing and writhing which implicated the muscles of both sides of the face and trunk.

A Morse telegraph was next used, the muscular movements in this case being restricted to an up-and-down motion of one finger of each hand, the number of such movements made in a given time being recorded on the usual long and narrow strip of paper as dots or dashes, in accordance with the celerity of contraction and relaxation of the flexors of the finger. The results of this series of experiments were uniformly confirmatory of those before obtained, but the method had to be abandoned as productive of great eye-strain in counting.

I then had made the instrument which is here shown. It consists simply in the clockwork and dial of an ordinary gas metre, to which a lever is adapted in such wise that each flexion of the finger is recorded by an appropriate motion of the index on the unit dial. The apparatus is fixed in a box, upon which the hand and forearm may conveniently rest. The lever projects through an aperture in the lid, and a glass plate in the side permits the records on the dial to be easily read off and noted. Six healthy prisoners, supplied with the incentives of cash and competition, were repeatedly examined by this means. To each, fifteen minutes was given to make the best record he could with (*e. g.*) the right forefinger, and thereafter the left forefinger was similarly exercised for the same time. On the following day the same process was repeated, always commenc-

ing, however, with the finger of the hand which had been used second on the previous occasion. No man was ever thus employed twice on the same day.

The results were practically uniform. The man who for fifteen minutes flexed and relaxed his right forefinger with the greatest speed possible to him would, on the following day, accomplish, on an average, nearly ten per cent. less work with that finger when its exercise was consecutive to a similar exercise of the forefinger of the opposite side, than when its work was initial.

Usually more work could be accomplished by the simultaneous exercise of the two forefingers, than by their exercise one after the other. In such exercise of both hands at once, and apparently from some unconscious effect at rhythm on the part of the subject, it was noted that the movements of the left forefinger were generally more active and rapid than when used alone, although in both instances the greatest effort at speed was evidently made. I am told that some pianists have a similar experience, inasmuch as they find it possible to exercise the fingers of the left hand more rapidly when the right is similarly engaged than when the right is inactive.

The relation of these facts to the observations of Dr. S. Weir Mitchell and Dr. Morris Lewis is supplemental in its nature. These observers, as is well known, showed that the knee-jerk is reinforced by any voluntary movement in any part of the body, and that this reinforcement was apparently due to such an irradiation of motor impulse from the active centres to other similar centres as placed them and their related muscles in a condition of heightened responsiveness to external stimuli. My studies not only tend to confirm these observations, but to show that the fatigue of one centre may induce a sympathetic fatigue in other centres.

These observations are of interest, inasmuch as they suggest—that the centres for volition, attention, and coördination (or one or more of these) are not, in their functional activity, bilaterally symmetrical and independent—that is, that these functions have not attained complete differentiation into right and left will, attention, or coördination; that, probably, the first effect of the voluntary activity of a portion of one cortical motor area is a stimulation of the corresponding portion of the other hemisphere—a stimulation that may result in its slightly premature fatigue; that apparently more work can be effected through the voluntary simultaneous exercise of two such portions of the motor apparatus than by their independent exercise one after the other.

DR. WEIR MITCHELL said that the remark that with fatigue comes an increasing tendency to convulsive or useless acts of facial or other muscles, is interesting. It seems to show that with feebleness comes increasing waste by overflow of motor energy on to distant ganglia. Perhaps in all states of weakness there is more or less increase in regard to this tendency. The explanation of Dr. Randolph's facts is difficult. It may be that the overflow of energy on to symmetrically related centres, or on to others, may be competent to weaken them without being strong enough to cause motion; and whether this occurs as regards the opposite hemisphere, or only as regards opposite spinal centres, is hard to say.¹

¹ As an illustration, we may by a key close the current of two batteries, A and B, each competent to set in motion a mechanism.

We are also free to speculate as to the relative failure of one hand, the last in use, as due to there being but one centre originative of will signals to the lower ganglia, and itself capable of fatigue. If, however, we entertain any such view, it might be in a measure tested by exacting work from a non-symmetrical pair of limbs, as a foot and hand. He inclined toward the use of the overflow theory to explain the lowered capacity for work by one hand after exhaustion of the other. It would explain why in consentaneous use of two symmetrical parts more work is done than when they follow one the other.

The overflow would be in this case valuable, and not damaging or wasteful. This led him to relate an experiment which Dr. M. Lewis and he left out of their paper on knee-jerk, but of which now he is sure enough to speak. When we use the maximum power of one hand on a dynamometer, the coincident use of the other hand adds nothing to the result; and this form of experiment has been commonly used as a test of the reinforcing capacity of the opposite member. If, however, using two fingers, or the grip of the thigh adductors, on the bulb of a mercurial dynamometer until great exhaustion occurs, and then making a new effort coincidentally with violent use of another member, the mercury leaps quite to the level attained during the first effort by unfatigued muscles. It does not seem easy to explain this fact, except by assuming that the overflow of energy usually wasted is in this case made efficient.

The question of muscular, and indeed ganglionic, tone is brought forward in an interesting way by this experiment. When we strike the patellar tendon, a sudden, distant, voluntary act, adds reinforcement. What is it that happens to the muscle or ganglion so influenced? Is it made more sensitive to impressions, or with this is there a slight flow upon it of motor energy? And if so, can we measure the effect, and thus influence what we conceive of as muscular tone?

For some time he has been engaged in discovering if these reinforcements do cause motion—*i. e.*, a slight preparatory muscular contraction making the subsequent volition, or other excitatory activity, more potent in its results.

He has been able, so far, to prove that in spastic cases distant muscular effort, such as a grimace, really causes distinct and measurable movement in the extensors of the thigh and presumably elsewhere. This interesting discovery has been confirmed in New York and at Harvard. Whether in *normal* man remote motion is thus capable of causing slight shortening of all other muscles does not as yet seem clear. In his own experiments he obtained what seemed to be the same but slighter results than such as were seen in spastic paralysis. He hopes very soon to solve his doubts, and to be able to state his conclusions in more decisive shape. Upon what these may be will depend much of our hope as to realizing clearly the true nature of muscular tone.

We often speak of nerve power as if there were a

common stock from which are drawn the supplies needed by every active organ, and reason that it is unwise to try to carry on at once two functions which exact large expenditures—as digestion and intense thought, or digestion and exercise. Practically the difficulty may be one chiefly of blood supply. This is illustrated in the not rare fact that some feeble people cannot digest except when at rest. These facts suggest to him the idea that he would like to see if Dr. Randolph's cases would lose ten per cent. of mechanical capacity after a period of exhausting mental labor or during digestion.

Dr. H. C. WOOD said that the old theory which was used to explain the principle of counter-irritation, was that there is a certain amount of nerve force in the system, and that when by means of counter-irritation the nerve force is drawn to a distant point, it is removed from the inflamed part. Modern science does not recognize the truth of this theory, but it looks to him as though there is a certain amount of truth in it.

Dr. H. R. WHARTON reported a case of

INNOMINATE ANEURISM TREATED BY SIMULTANEOUS DISTAL LIGATION OF THE RIGHT COMMON CAROTID AND SUBCLAVIAN ARTERIES; RECOVERY.

Andrew C., aged forty-two years, was admitted to the University Hospital, suffering from an aneurism of the innominate artery.

On Nov. 13th he was etherized, and Dr. Ashhurst cut down upon and ligated the right common carotid artery just above the omohyoid muscle with a catgut ligature; the right subclavian artery was next exposed and ligated in its third part just outside the anterior scalene muscle with a ligature of the same material. The wounds were closed with silver sutures, drainage tubes being introduced, and were dressed with oiled lint, the whole right arm being wrapped in cotton. No immediate effect was noticed in the aneurism from the application of the ligature, nor were there any cerebral symptoms. The patient did well after the operation, and upon the succeeding day the temperature and color of the right arm were good. The wounds did well, and in the course of a few days it was noticed that the tumor at the root of the neck had become smaller and firmer, and that its pulsations had diminished in force; the dyspnoea and dysphagia had also diminished very markedly, and the patient was able to sleep comfortably in the recumbent posture. Up to the time of his discharge from the hospital repeated examination failed to discover any pulsation in the radial artery. After this time the patient's improvement was continuous, and he was discharged from the hospital on January 13th, just two months after the operation.

Consecutive double distal ligation of the right carotid and subclavian arteries has been practised for innominate aneurism (as diagnosticated) in eight cases, with three recoveries and five deaths, although there was temporary relief in one of the fatal cases.

Dr. Wharton has found the records of thirty-two cases of simultaneous double distal ligation of the right carotid and subclavian arteries for innominate aneurism (as diagnosticated), in which the operation was followed by recovery in twelve cases, death in sixteen cases, and by temporary improvement in four cases. The results of both methods of treatment as regards the number of recoveries is nearly equal, but it must be remembered

Resistances on the one circuit, A, so interfere as to lessen the flow of energy below what will move the mechanism. Meanwhile the other battery, B, runs to exhaustion. At last we call on battery A for a repetition of the full work done by B, and find A unable to effect the same work as that done by B, on account of having been partially disabled by its previous ineffective waste of energy.

that the number of cases in which consecutive ligation was resorted to is very small in comparison with that in which simultaneous ligation was employed. He thinks, therefore, that at the present time the weight of surgical opinion is in favor of the views of Mr. Barwell, that, in innominate aneurism, the simultaneous double distal ligation of the right carotid and subclavian arteries is both a more efficient and safer procedure than the consecutive ligation of the vessels.

NEW YORK SURGICAL SOCIETY.

Stated Meeting, March 23, 1887.

THE PRESIDENT, CHARLES MCBURNEY, M.D.,
IN THE CHAIR.

CASE OF EXCISION OF THE ELBOW.

DR. WYETH presented a boy, fourteen years old, whose elbow he had excised a few weeks before. He entered Mt. Sinai Hospital in January, having but slight power of motion in the left elbow. Exsection was performed, one inch of the humerus being removed, together with the articular surface of the radius and ulna. The olecranon was partially preserved, in order to maintain the attachment of the triceps. A movable splint was applied, and at the expiration of ten days passive motion was practised daily. A rapid recovery followed. The patient was presented in order to show the fair degree of mobility obtained at this early stage of the after-treatment.

DR. GERSTER said that he had repeatedly used the apparatus in a case of excision, but had not been entirely satisfied with the result, since flexion could be carried only to 90 degrees, because the posterior part of the capsule was too short. In reply to a question from Dr. Wyeth, as to whether the new capsule was not rendered more lax, he said that, on the contrary, he employed this method of treatment in order to correct too great laxity. By reason of the movable hinge, the bones were compelled to move backward upon the sawn surface of the humerus; otherwise they would tend to be attached near to its anterior edge.

DR. BRIDDON asked if the object aimed at was not to restore the fulcrum as it originally existed.

DR. GERSTER said that it was. The apparatus, he explained, was not originally devised by Dr. Lange, but by Madelung some time before; Dr. Lange had only added the sliding fulcrum.

DR. SANDS remarked that, theoretically, all excised joints should heal without suppurative, but that such results were certainly exceptional. The result in the present instance seemed to be fairly good. Where there was no suppurative healing occurred promptly, as in a case which he had exhibited before the Society, and in which he had performed excision for the relief of ankylosis; healing was complete at the end of two weeks. It would be useful, the speaker thought, to note in the case presented just how much had been gained by the treatment. While rotation appeared to be good, flexion and extension were both limited, the angle between the arm and the forearm being 90 degrees in the position of extreme flexion, and about 130 degrees in that of extreme extension. It seemed also to him that the impediments to free motion were of a bony character, which would not be removed by passive motion.

DR. WYETH admitted that Dr. Sands's observation with regard to the limitation of motion was just as it applied to extension of the forearm. He had purposely left a little of the sigmoid surface in this case, in order to preserve the insertion of the triceps muscle; the arrest of extension was undoubtedly due to this bony projection. He added that the boy had passed from under his observation three weeks after the operation, although he did not leave the hospital until three weeks later, so that he (Dr. Wyeth) did not have an opportunity to practise passive motion of the joint; he intended to see the patient at frequent intervals, in order to manipulate it. If he could gain no more of extension than that at present enjoyed he would be satisfied. The object of further treatment would be to improve flexion.

DR. POORE said that he had excised an elbow more than a year before, and the patient returned with complete ankylosis. He repeated the operation, and healing occurred without suppurative, although pus had been present on the first occasion. He thought that there was always more or less suppurative after the first operation.

DR. WYETH remarked that there was very little suppurative in the case under consideration. Strips of tin were applied at first, but these were removed, and the movable splint worn after ten days.

DR. BRIDDON thought that the restricted motion observed in these cases was often due to the surgeon's anxiety to save as much of the bone as he could. He cited in illustration a case in which he had freely excised an elbow-joint in a woman, and, as a result, the arm appeared to be little better than a flail. After an angular splint had been applied the patient could use the limb quite well. He thought that she could not do without the splint, until it was removed for a time in order that it might be repaired, when she found that she could dispense with it. She was now able to perform her household work without any trouble. He has within a year excised the elbows of two children at the Presbyterian Hospital, whose ages were about the same as that of Dr. Wyeth's patient. In one case tuberculous arthritis was present, and there was a long sinus leading into the joint. A bone drain was introduced, and this was filled with iodoform. There was no suppurative whatever, and the patient was well in seven weeks. The second case was one of badly united fracture, and healing was perfect at the end of four weeks. The patient had been repeatedly examined since the operation, and the motions of the joint were entirely satisfactory.

In answer to a question from the President DR. WYETH said that by employing passive motion he expected to produce gradual stretching of the contracted ligaments. Limitation of flexion in the case presented was probably due to this condition, but extension was prevented by the contact of bony surfaces.

DR. GERSTER's experience in the fifteen or sixteen excisions which he had performed had been this, that more *personal* attention was needed on the part of the surgeon in cases where only small portions of bone were removed, especially in children. It was necessary to employ passive motion very carefully, or serious harm might be done. Active motion intelligently directed, and massage were the agents to be used, the latter being especially valuable when a small amount of bone had been removed. The obstacles to motion

were, in the first place, the swelling of the parts, and in the second, the pain and resistance on the part of the patient. Whenever, the speaker added, he did not attend personally to the details of after-treatment, the result had been unsatisfactory. Suppuration was not such an important element as regarded the final result; better results sometimes followed in cases that did not heal by first intention, because the surgeon gave more attention to the case than when healing was uninterrupted. Dr. Gerster had never had a case of ankylosis after excision, and in several instances there had not been a drop of pus.

DR. SANDS contended that it was important to avoid suppuration in cases of partial excision. He cited the case of a patient, presented to the Society by Dr. Hall, in whom he (Dr. Sands) had excised only a portion of the olecranon, for limited tuberculous disease, the whole hinge-joint being preserved. There was an entire absence of suppuration and motion was almost perfect. The speaker could hardly imagine how suppuration could occur in a joint thus excised, in which the opposed surfaces were so intimately related, without resulting ankylosis, or, at least, some limitation of motion. When a large amount of bone was removed, it did not make so much difference.

DR. GERSTER accepted Dr. Sands's amendment with regard to the class of cases in which it was important to avoid suppuration entirely. The more nearly an excision approached an arthrotomy, the more necessary was it to secure an absence of suppuration. The speaker acknowledged that he should have expressed himself more exactly by using the terms *septic* suppuration, meaning a suppurative process that resulted in the extensive destruction of the tissues belonging to a joint.

DR. ROBERT ABBE read a paper entitled

ANEURISMS TREATED BY THE INTRODUCTION OF CATGUT, OR OF WIRE, WITH ELECTRICITY.

(See page 397.)

DR. PETERS asked Dr. Abbe if he had met with a record of Dr. Buck's case, in which wire or horsehair was introduced into the sac.

DR. ABBE replied that there were several recorded cases in which horsehair and other foreign bodies had been employed, but that his paper dealt exclusively with the use of wire and catgut.

DR. WEIR asked whether it was desirable to use electricity so long if the wire was really disintegrated.

DR. ABBE did not think that harm could result.

DR. WYETH did not see what additional advantage was obtained by passing a galvanic current through the wire after it had been introduced, since experiments on animals had shown that the mere presence of a foreign body in a bloodvessel was sufficient to produce this result. As he understood the purpose of the operation, it should be to favor *slow* not *rapid* coagulation, since the latter process is fraught with more danger than is gradual solidification of the tumor.

DR. SAND called attention to the fact that the idea that rapid coagulation of the blood in an aneurism is injurious, had been abandoned. There are many cases on record in which large aneurisms had been cured by total compression continued for not more than an hour, or an hour and a half, the coagulation being perfect and the cure permanent.

DR. WYETH replied that about nine years before he had made a special study of large aneurisms at the root of the neck and at the arch of the aorta, and had published a paper on the subject. At that time after a careful review of the evidence on the subject, he had reached the conclusion that rapid coagulation of the blood within the sac was more apt to be followed by disastrous consequences.

DR. WEIR thought that the brilliant results obtained by Esmarch's method of treatment showed that rapid coagulation was not dangerous. The best results had been obtained in cases of sacculated aneurism. He was struck while examining Dr. Lange's specimen with the fact that many of the loops of wire remained free within the cavity of the sac, were quite bright, and had no clot adherent to them. Dr. Weir thought that there was something in the idea advanced by the reader, that the galvanic current served to roughen the surface of the wire, and thus favored the deposition of clot.

DR. GERSTER said that he had practised the method described by the reader in one instance. The patient was an undertaker, forty-five years of age, who entered the German Hospital, early in January, with a large dissecting aneurism that involved the arch of the aorta and protruded behind the sternum and clavicle, interfering with respiration. Shooting pains in the occipital region formed a prominent symptom in the case, while hoarseness was also marked. Although the patient's physician affirmed that the tumor had first appeared only three weeks before, the pains in the head and in the nape of the neck, supposed to be of a rheumatic character, had been present for a year. Dr. Gerster inserted a canula into the sac, and introduced through it thirty-six feet of thoroughly disinfected steel wire similar to that used by Dr. Abbe, care being taken not to push in the canula beyond the middle of the sac. It was noticed that as a fresh portion of wire was thrust in, there was a rhythmical protrusion of the opposite wall of the sac. The operation was easy, lasting only thirty minutes, and caused no discomfort to the patient. The spot where the puncture was made was carefully covered with iodoform gauze. There were no bad symptoms until the end of the third day, when the temperature began to rise. It eventually reached 102° F. The size and state of the tumor were certainly not favorably affected by the operation, while the patient's general condition became worse. The tumor grew softer, and on the seventeenth day after the operation a sudden and fatal hemorrhage into the pleural cavity occurred. An autopsy was not permitted. In this case there was not even an apparent improvement after the introduction of the wire. The speaker added that, if he had occasion to repeat the operation, he would use ordinary unpolished iron wire, because he believed that its roughness would be more likely to favor coagulation.

DR. BRIDDON asked if catgut introduced into an aneurism did not soon become softened, and float in the blood-current, so that there was danger of its being carried into the distal vessels.

DR. ABBE thought that it was desirable the artery leading from the sac should be plugged; doubtless this sometimes occurred.

DR. BRIDDON explained that he referred, not to the distal portion of the artery at its exit from the sac, but to the distal vessels. If only one vessel was occluded,

no harm would result, but all the efferent vessels might be plugged. The reader did not see how this accident could occur, as the catgut became so matted together that a portion of it could not escape from the sac unless the entire mass was dislodged.

DR. GERSTER referred to a case in which during the introduction of wire into an aneurism of the aortic arch, alarming symptoms occurred. It was found that a portion of the wire had become separated and was pushed downward through the lower opening of the sac until it rested upon the aortic valves.

DR. ABBE said that a similar accident had occurred in Dr. Ransohoff's case. A piece of wire was pushed through the sac and came in contact with one of the valves, in consequence of which the patient had a severe attack of syncope during the operation. In reply to a question by the President, the reader admitted that the operation was not entirely devoid of risk, but then, he added, it must be remembered that the cases were all desperate ones.

DR. WYETH said that he had been disappointed to see that none of the speakers had drawn a comparison between the results of the method described by Dr. Abbe and distal ligation. All the cases mentioned by the reader had terminated fatally within three months at the longest, the average duration of life after the operation being about twenty-five days. The results of distal ligation had certainly been much better as regarded both the prolongation of life, and the cure of the aneurism. He cited in this connection the case of a patient in whom he had tied the right subclavian and carotid for an aneurism involving the sinus magnus of the aorta, which had advanced so far as to cause erosion of one rib. The patient was clearly in a hopeless condition and death was imminent. After the operation she was greatly improved, the tumor decreasing visibly, and lived for a year, dying eventually of acute diarrhoea. At the autopsy it was found that the sac was almost entirely filled with coagulated blood, the space that remained being no larger than an almond. He still had the specimen in his possession. The benefit to this patient was undoubted, and there was no reason to believe that the patient would ever have died in consequence of the aneurism.

CORRESPONDENCE.

A CASE OF SKIN-COLORING FROM THE CONTINUED USE OF NITRATE OF SILVER.

To the Editor of THE MEDICAL NEWS,

SIR: Well-authenticated cases of skin-coloring by nitrate of silver are sufficiently rare to warrant a report of the following case:

Mrs. I., æt. forty, who lives in a neighboring town, came to me a few weeks since and said: "Doctor, I wish you would look at my face, and tell me whether you think that there is any probability that this discoloration could be removed by medicine. About two years ago I went to a doctor for treatment to correct a chronic diarrhoea, and he gave me a pill, directing me to take one three times daily, and to continue the medicine for some weeks. I have taken those pills almost every day since that time, never suspecting that this peculiar color

of my face and hands was due to the continued use of the medicine. I know the medicine has produced this result, because I called on the doctor the other day, and he told me that I had colored my skin with those pills, and that he did not mean that I should use them for so long a time."

To ascertain the amount of silver she had taken in each pill, I asked for a copy of the prescription, and found the dose had been one-third of a grain. This amount, according to her own statement, she had taken almost continuously for about two years. The coloring of the skin is very marked, a dull, dark, metallic appearance in certain lights, and a bright lustre like burnished silver in others. No other case that I have ever seen would, without hearing the history, suggest at once the deposit of silver in the skin as this case does. Then, too, I had seen the lady on several occasions previous to the use of the medicine, and remember her as having had a singularly fair and transparent complexion. There are certainly few cases on record of this peculiar color of the skin, in which the cause can be so clearly traced to the long-continued use of nitrate of silver.

H. M. SHALLENBERGER.

ROCHESTER, PA.

NEWS ITEMS.

MONTREAL.

(From our Special Correspondent.)

MCGILL UNIVERSITY, MEDICAL FACULTY, NEW GRADUATES.—45 men received the M.D. C.M. degree at the last convention of McGill University, held March 29. There were also 45 men who passed the primary or second year examination in anatomy, physiology, histology, and chemistry. The total number of students in the medical faculty (exclusive of 30 veterinary) was 231. Of these 112 came from the Province of Ontario. Prof. Buller read the valedictory on behalf of the Faculty, and Dr. A. D. McDonald, of New Brunswick, on behalf of the graduating class.

SUMMER SESSION.—The summer session of the medical faculty of McGill University commences April 12, and continues three months. The courses are chiefly practical and clinical.

TORONTO MEDICAL SCHOOLS.—The medical schools of Toronto at present have no power to confer degrees. They merely prepare their men for the provincial examining board and the examinations of the Toronto and Victoria Universities. One of these schools is at present applying to the Legislature for power to grant the M.D. degree; it is opposed by the other. A suggestion is made that the two schools unite and one good school be formed. If this is done, another teaching body is sure to be formed to fill the void and give places to men who desire the prestige and glory (if such there be) of being connected with a medical school.

The Ontario Medical Council are endeavoring to get a bill through the Legislature giving them power to strike off from the register the name of any one guilty of unprofessional conduct.

MEDICAL LEGISLATION IN QUEBEC.—The present session of the Legislature in Quebec promises to be a

short one and there is not much doubt that the consideration of the new medical act will be postponed. The change of government has altered the state of affairs considerably.

INVESTIGATION OF THE INSANE ASYLUMS.—A Royal Commission has been appointed to investigate the various lunatic asylums in the Province of Quebec. If the commission be properly composed of independent and unprejudiced men, the results may be of great value, and the iniquity of the "farming system" will be thoroughly exposed; but a very thorough investigation in the present state of political parties cannot be looked for.

THE NEW YORK BOARD OF HEALTH.—The Board of Health has amended the section of the Sanitary Code governing the removal of stable-manure, so that, in future, such material on any city premises must be baled or removed as soon as a cartload has accumulated, it being also provided that the baled manure shall not be allowed to become a nuisance. This change has been made at the request of the Medical Society of the County of New York, on the recommendation of its Committee on Hygiene.

RESIGNATION OF DR. FRANCIS MINOT.—Dr. Francis Minot has resigned his position as Visiting Physician at the Massachusetts General Hospital.

PRIZE OF \$1000.—The Concentrated Produce Company, of London, offer the above prize for the best work upon the "Physiological Action of the Narcotic Principle of Hops." Competition is open until February, 1888.

DEFECTIVE SANITATION AS A CAUSE OF PUERPERAL DISEASE.—Under the above title Dr. W. S. Playfair, one of the leading physicians of London, has recently given an address in which he describes several cases of puerperal fever occurring in houses of the best class, and in which investigation showed that the patients had been exposed to the influences of sewer-air during and immediately after labor. This exposure was caused by leaky and defective fittings in the house plumbing, and in the address, as published in the *Lancet* of February 5, 1887, several diagrams are given, showing the relations of the bedrooms of the sick women to leaky soil-pipes, trapless bath wastes, etc.

Undoubtedly, a woman, immediately after the birth of a child, is specially susceptible to the action of the specific germs which tend to produce inflammation and abscesses, and either soil-pipe or sewer-air is specially liable to contain these germs.

We have had occasion before to comment on the special danger incurred by a woman who is confined in the autumn in a city house of the better class which has been unoccupied during the summer. All such houses are connected with either sewers or cesspools, and unless the traps be kept sealed with fluid, the germs above referred to are liable to enter the bath-rooms, and bedrooms connected with them, and to be found in the dust which settles in various parts of the room. If the house is unoccupied for any length of time the traps will become unsealed by evaporation. This danger can be avoided by filling the traps with glycerine, or by

making arrangements to have water run in all the fixtures for a moment or two once every day.

If through ignorance or forgetfulness these precautions have been omitted, a thorough removal of all dust by cloths or sponges moistened with a solution of bichloride of mercury of the strength of 1 to 1000, with aëration of all rooms, is the best way to obtain security. Special care should be taken not to do any dry sweeping or dusting in the rooms until all surfaces have been rubbed with the solution above referred to, for unless this be done the dangerous dust will be merely whisked about and displaced, but not destroyed.—*Sanitary Engineer*, March 26, 1887.

THE HOSPITALS OF GERMANY.—In the Report of the German Exhibition in Hygiene, as noticed in the *British Medical Journal*, of March 5, 1887, Dr. BOERNER describes hospitals in Germany as follows: Like the slaughter-houses and market at Berlin, the Friedrichshain Hospital, near that city, bears the palm. It consists of four pavilions for surgical, six for medical, and two for infectious cases, with administrative department offices, etc., all forming detached blocks. Each pavilion has its own operating room, bath room, apartments for attendants, kitchen for minor cookery, heating apparatus, etc., forming a complete and almost independent establishment. The blocks are of one story only, consisting of a general ward with twenty-eight beds, with offices at one end and the apartments at the other; over the latter is a small ward, entirely shut off from the larger one, containing a couple of beds for suspected cases, pending removal to the infectious blocks. The building is warmed by hot water pipes, and the ventilation, when the weather does not admit of perfilation by the windows, is effected by warmed air. The system adopted is too complex for description in this place, but is highly ingenious and scientific, and is said to be most satisfactory in every way. Like most of the newer hospitals in Germany, it is outside of the city, and surrounded by park-like grounds. Next, perhaps, to that of Friedrichshain stands the Moabite, also at Berlin, which consists of thirty detached pavilions, each containing thirty beds. It is heated by steam, but natural ventilation only is employed; the ridge of the roof of each ward being formed of two valves, surmounted by a riding roof, also with a valve arrangement. Such a construction would, it seems to us, be admirably adapted to churches. More than thirty other hospitals are described and figured, and the report concludes with a summary or survey of the whole subject by Dr. Boerner. One-storied buildings, he says, are everywhere preferred for surgical, obstetric, and infectious cases, though two stories may be permitted in the treatment of ordinary medical cases. In some hospitals, separate blocks are appropriated to skin diseases, cancer, and ophthalmic cases. At Halle, the several infectious diseases are treated in distinct wards, ingeniously isolated one from the other, and separately ventilated; while, at Magdeburg, convalescents are removed to special blocks. Heating is almost everywhere effected by hot water or steam pipes, and ventilation generally by warmed air, at least in cold weather, but the systems adopted are very diverse. At Dresden, the flues can be laid open for cleaning throughout their entire length; and at Berlin University Hospital, at Halle, and elsewhere, they

are very accessible. At Hamburg alone, the floors are of stone, warmed by flues—a plan which has received but little favor in medical circles. In several hospitals the elaborate systems of combined heating and ventilation leave little to be desired, especially in winter, but in others they are far from successful. None, however, approaches that of the Moabite Hospital at Berlin, where flues and exhaust-shafts are dispensed with, and the warm air, abundantly supplied from below, finds free exit in the valvular arrangements of the ridge and riding roof. Nothing could be simpler; but the working is costly from the large amount of heat wasted, if that can be called waste which secures an unlimited renewal of the air.

WHO SHOULD VISIT CARLSBAD.—DR. TAYLOR, writing in answer to this question in the *New York Medical Journal* of April 2, 1887, describes suitable patients for Carlsbad "cure" as follows:

The typical patients for Carlsbad are, according to my experience and conviction, those with certain affections of the glandular system, especially of the liver and kidneys, and of the mucous membranes. Perhaps I might better say, all those affections depending on, or accompanied by, general capillary stases, terminable in some form of direct disintegration, but excluding cases, like tuberculosis, in which there are formative processes of a low order preceding disintegration.

At any rate, one important effect of the Carlsbad waters seems to be the thorough washing out of the capillaries. Hence the important service it renders the mucous membranes and glands when the nutritive fluids find difficulty in circulating through them.

PROVING THE SOUNDNESS OF AN EYE.—In a large factory in which were employed several hundred persons, one of the workmen, in wielding his hammer, carelessly allowed it to slip from his hand. It flew half way across the room, and struck a fellow-workman in the left eye. The man averred that his eye was blinded by the blow, although a careful examination failed to reveal an injury, there being not a scratch visible. He brought a suit in the courts for compensation for the loss of half of his eyesight, and refused all offers of compromise. Under the law, the owner of the factory was responsible for an injury resulting from an accident of this kind; and although he believed the man was shamming, and that the whole case was an attempt at swindling, he had about made up his mind that he would be compelled to pay the claim. The day of the trial arrived, and in open court an eminent oculist retained by the defence examined the alleged injured member, and gave his opinion that it was as good as the right eye. Upon the plaintiff's loud protest of his inability to see with his left eye, the oculist proved him a perjurer, and satisfied the court and jury of the falsity of his claim. And how do you suppose he did it? Why, simply by knowing that the colors green and red combined make black. He prepared a black card on which a few words were written with green ink. Then the plaintiff was ordered to put on a pair of spectacles with two different glasses, the one for the right eye being red and the one for the left eye consisting of ordinary glass. Then the card was handed him, and he was ordered to

read the writing on it. This he did without hesitation, and the cheat was at once exposed. The sound right eye, fitted with the red glass, was unable to distinguish the green writing on the black surface of the card, while the left eye, which he pretended was sightless, was the one with which the reading had to be done.—*Pottery Gazette*.

HOW TO SCALD MILK.—Take a thick glass bottle provided with a rubber cork, fill it with milk nearly up to the neck, and place it uncorked in a kettle of water, which should then be gradually brought to the boil. When steam has commenced to escape from the bottle, cork it tightly, and continue the boiling for thirty-five or forty minutes, and the process will be complete. A bottle of milk thus prepared, it is said, will remain sweet a month if in a cool place.

The above method is suggested by that of PROF. SOXHLET (*Münch. med. Wochenschr.*) in which ten bottles like soda-water bottles, capable of being exposed to heat without cracking, are fitted into an open stand like a cruet stand, or an egg frame. The milk is first prepared by dilution and otherwise for administration, and the bottles are filled to within a short distance of the top. They are then closed with a rubber cork containing an aperture for the feeding tubes. This hole is to be left open. The frame containing the bottles is then placed in a metal pot of water for heating, immersed so as to be covered up to the neck. Heat is applied until the water boils when, after the milk and air in the bottles have expanded sufficiently, the holes are to be closed, glass rods being used for this purpose. The water is afterward kept boiling rapidly for thirty-five or forty minutes, when the stand with the bottles in it is to be lifted out to cool. Milk that has been treated in this way will keep, at the ordinary temperature of the room, for from three to four weeks without curdling. At the same time it is free from the inconvenient formation of skin on the surface, by which the feeding tubes become stopped up and made dirty. When once open, all of the bottle should be quickly used. Any portion not consumed at once should be thrown away.

The process of boiling articles to be preserved in an open vessel and sealing this vessel while steam is escaping, subsequently keeping up the heat for a time, will be familiar to every one who has canned fruit. The reason this method has not been more commonly applied to milk, is perhaps explained by the fact that curdling has been considered an inevitable property of milk. With the progress of the germ theories, however, it has been decided that even this every-day phenomenon depends upon contamination by these pests.

All have realized that stale milk will spoil that which is fresh, if mixed with it in ever so small a proportion. A tainted can or bottle has to be avoided for this reason. If the action of microorganisms produces the coagulation, the tainting of fresh by stale milk is easily understood.

What is effected by Prof. Soxhlet's process? In the first place, by boiling in an open vessel all air is expelled from the surface of the fluid, and thus, by depriving them of oxygen, the further growth of any germs already in the milk is prevented. The subsequent boiling of the sealed vessel is intended to destroy such retained germs.

The reason that milk thus preserved will not keep indefinitely, is entirely due to the imperfect execution of the process with the conditions at our command. It is improbable that thrusting a glass rod into the aperture of the cork will make the bottle completely airtight; and, further, it is doubtful whether by simply placing the bottle in boiling water we can destroy all germs. Dr. Knapp considers repeated and prolonged exposure to moving steam necessary for perfect sterilization. Prepared in this way, he has in his laboratory flasks of milk which, after many months, are yet perfectly sweet.

But we cannot control the conveniences of a laboratory, and Prof. Soxhlet's method will be found a great improvement upon our usual procedures. It is hoped, that in view of the immense importance of the subject, and the very general acceptance which bacteriology has gained, the nurse will not be difficult to convince in this matter. It is an affair quite within our own province. Instead of "scalding milk" upon the back of the stove, in a tin vessel, one can adopt the bottle with a rubber cork. An ordinary soda-water bottle, if thoroughly cleansed, will answer the purpose. The perforated cork and glass rod are only necessary when the cork is intended to fit the feeding-bottle tube. The milk as it arrives may be immediately subjected to treatment, and afterward prepared as required. The previous dilution and the feeding out of the sterilized bottle, is a further refinement of the process, and a complicated arrangement, which the nurse could not introduce without the physician's order.—*The Nightingale*, March 15, 1887.

FEMALE MEDICAL STUDENTS ABROAD.—*Nature* gives in a recent issue some interesting details respecting the number of women engaged in the study of medicine at certain European centres of professional education. At the University of Paris there are at present *in statu pupillari* in this faculty, no fewer than one hundred and eight women, thus distributed as to nationality: Russian, 83; English, 11; French, 7; American 3; Austrian, 2; Roumanian, 1; Turkish, 1. The greater proportion of Russian students is due to the closing of the Female Medical School, founded a short time ago in St. Petersburg, and it is assumed by M. Beclard, in his report to the Academical Council of Paris, that, owing to the fact that the preliminary studies of the Medical Faculty of the University having now been made the same for men and women alike, the number of the latter entering the school will undergo gradual but certain diminution. It is also noted that one lady, Miss Klumpe, has been elected this year to the post of interne in the Paris hospitals, she having secured the second place on the list of successful candidates. At the University of Upsala there are at present three ladies engaged in the study of medicine.—*Obstetric Gazette*, March, 1887.

PASTEURISM AND ITS RESULTS.—M. Bergé, an inhabitant of Bordeaux, who was treated for rabies by M. Pasteur six months ago, developed symptoms of the disease a few days ago. He was taken to the Saint André Hospital, where he died, after a terrible attack of rabies. Dr. Pitres refused to give his opinion upon this case until he had inoculated rabbits with a portion of the patient's spinal marrow.—*British Medical Journal*, March 12, 1887.

LITTLE PILLOWS.—Miss Brennan suggests in *The Nightingale* of March 15, 1887, that chaff, where it can be obtained, makes a good cushion for preventing pressure, and relieving weariness in the sick. These cushions or pillows are most convenient when about twelve inches long and eight inches broad. They must be both firm and soft. Cotton can be used in the absence of better material. In using cotton, pack it evenly, so as to avoid lumps. Cases or covers of old linen make these pillows particularly grateful where used next to the fevered skin.

Six such cushions are not too many for use about the subject of a tedious illness. Two, one upon each side under the hip-bones, take the place of a ring in averting bedsores, and contributing to the patient's comfort. They can be tucked under the back for a support when the patient is upon the side, answering better than the larger pillows for this purpose. One can be put under the head to save pressure upon the ear, which often becomes tender after being a long time in bed. If the head is to be a little lifted, it is easier for the patient to have one of these cushions slipped under, on top of the pillow, or tucked in so as to prop up the pillow, than to have the whole rearranged. One can be placed between the knees when the patient is upon the side; under the ankle when the heel has become sensitive to pressure. One can be tucked under the shoulder so as to lift the sharp angles of the emaciated body from the bed. In fine, the uses of these little pillows are numberless, and it would be a most acceptable charity if sewing circles and others interested, prepared them in quantities for hospital use. The emaciated patient, dying of consumption or cancer, would employ them with gratitude; also surgical cases, such as cases of fracture of the thigh and leg, which must maintain one position. The relief afforded in these cases by a little pillow, now here and now there, must be seen to be appreciated.

NOTES AND QUERIES.

A PORRO-MÜLLER OPERATION.

To the Editor of THE MEDICAL NEWS,

SIR: In your issue of March 26th is published an abstract of a report of a Porro-Müller operation, submitted by myself before the Philadelphia Obstetrical Society. The abstract was prepared by the Secretary, who omitted to state that the patient was under the care of Dr. E. J. Groome and others, of Bristol, Pa. It was at the request of Dr. Groome that Dr. Allis and myself proceeded to Bristol, on the seventh day of labor, and performed the operation. We did not attempt version as stated.

WILLIAM H. PARISH.

PHILADELPHIA, March 27, 1887.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 26, 1887.

WAGGENER, J. R., *Passed Assistant Surgeon*.—Commissioned a Surgeon on the 18th of March.

FITTS, H. B., *Passed Assistant Surgeon*.—Ordered to the Receiving Ship Vermont.

TRACY, E. C., *Assistant Surgeon*.—Detached from the Vermont and ordered to the Atlanta.

HEFFINGER, A. C., *Passed Assistant Surgeon*.—Detached from the Atlanta and ordered on special duty in connection with construction of hospital at Widow's Island, Me.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE WEEK ENDING APRIL 2, 1887.

URQUHART, F. M., *Passed Assistant Surgeon*.—To assume charge of Cape Charles Quarantine, March 29, 1887.

NORMAN, SEATON, *Assistant Surgeon*.—To report for duty at Cape Charles Quarantine, April 2, 1887.